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ABSTRACT

This resource unit for 5th graders includes three case studies and a sub-unit on the West as a region. Three sequent occupance case studies which are suggestive, rather than prescriptive, comprise the first part of the unit. Teachers may decide to select only one for an in-depth study or may decide to design a case study modeled after this resource unit. In the study on Phoenix, the importance of irrigation, the development of new techniques, and inventions that resulted in a changing situation are presented. A case study on Los Angeles illustrates the use of land by various cultures, the development of a port city and railroad routes, change as a result of specific developmental factors, climatic influences, and today's urban problems. Sub-unit three, a study of Seattle, follows the same kind of pattern as in other case studies. Following the case studies, pupils look at the West as a whole, including the Great Plains area, identifying the difference among subregions of the West as well as characteristics which set the West apart as a larger region from other regions of the country. The teacher's guide ED 062 226 provides program descriptions, course objectives, teaching strategies, and an explanation of format. Other related documents are ED 061 134, ED 062 227, and SO 002 732 through SO 002 741. (Several pages may be illegible.) (Author/SJM)

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Grade Five
Unit: The West
Sub-Unit: D The West as a Region
5

RESOURCE UNIT 5/4

SO 002 741

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INTRODUCTION

Since two different approaches are suggested for this sub-unit, of case studies used, the outline of content for this resource with the teaching procedures following it in a different sectio help the teacher identify important similarities and difference of the West. The outline is not arranged in the order in which this sub-unit. Follow the teaching procedures, instead.

INTRODUCTION

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OUTLINE OF CONTENT

I. Although most of the West is characterized by little rainfall, sparse population, rich resources, and little industrialization, there are wide variations among sub-regions. Even less than the other regions studied thus far, this larger region needs to be broken down into sub-regions of the dry plains, the mountain region, the intermountain region, the southern coastal region and the northern coastal region.

II. There are certain general characteristics of the largest part of the West.

  A. Most of the West is an area of little rainfall.

    1. The area beyond the 100th meridian was previously referred to as the "Great American Desert."

    2. The existence of mountains along the coast and inland greatly affect the amount of moisture received in the area.

  B. Man has greatly affected the capabilities of this area to sustain life.

    1. He has constructed dams and reservoirs to conserve and regulate water.

    2. He has constructed vast transportational systems to cross "The Great American Desert" and unite the East and West.

    3. He has established vast irrigational systems and made the deserts bloom.

    4. He has constructed aqueducts to transport water long distances from rivers to cities.

    5. He has built a port at Los Angeles, which has helped that city become the largest city in the West.

C. Large areas of the West are sparsely populated, although there are some areas of dense populations.

  1. Occupations engaged in (such as farming and herding) affect density.

  2. Lack of moisture helps to explain the lack of population in this area.

  3. The rugged nature of the mountains also helps explain why this area is sparsely populated.

  4. Areas of dense population exist along the coast.

    a. Some of the ports are important "gateway cities."

    b. This area receives quite adequate moisture or can get water in other ways from mountain rivers.

III. The West is usually broken down into sub-regions.

A. The Western great plains is divided into low plains and high plains. Both are arid and are used for grazing and the raising of some cotton and wheat. The region has many oil and gas wells. The western high plains include a number of gateway cities to the mountain region. These cities draw upon both the mining areas of the mountains and upon the agricultural production of the plains area.

B. The Rocky Mountain region is rich in mineral resources and contains many isolated mining towns. The valleys are used for farming and contain a number of trade towns. The mountain region provides much lumber and is also an important recreational area for people from all over the country.

C. The Intermountain Region is very arid, with some deserts which are not used at all. Large parts of the area are irrigated or used for dry farming (in the north). The region also has a number of mines.

D. The coastal region is marked by heavy population densities, large cities (including important ports), rapid industrialization, weather which attracts many visitors and permanent dwellers, important agricultural areas, and an important lumbering industry. The coastal region may be divided further into a northern coastal region which is much wetter and a southern coastal region which is much drier.

   1. The southern region must depend upon irrigation but has a rich farming area which emphasizes fruit and vegetable production. It has major ports and industrial cities.

   2. The northern coastal region has varied farm production in the valleys, an important lumber industry, and major ports.

E. Or people sometimes divide the West into the Plains area, the Northwest, and the Southwest.

IV. All of the sub-regions of the west have trade relations with each other, with other parts of the United States, and with the countries in other parts of the world. So does every other region in the U.S.

OBJECTIVES (SKILLS)

S. Draws inferences from a comparison of different map patterns of the same area.

OBJECTIVES (GENERALIZATIONS)

G. Phenomena are distributed unequally over the earth's surface, resulting in great diversity or variability from one place to another. No two places are exactly alike.

G. Population is distributed unevenly over the earth's surface; many of the land areas are thinly populated.

G. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena, and some on the basis of functional relationships.

G. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena, and some on the basis of functional relationships.

G. Man uses his physical environment in term of his cultural values, perceptions, and level of technology.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

TEACHING PROCEDURES

MATERIALS

OPTIONAL APPROACH NO. 1

1. If pupils have studied one of the three case studies and the sub-region within which it is located, have them turn now to an examination of map patterns of the entire West. Show them a map of the West as defined by Borchert and McGuigan. Then have them examine map patterns such as physical relief, precipitation, temperature, agricultural land use, mineral resources, population density, etc.

   Ask: How does the sub-region which you have already studied compare with the rest of the West? What distinguishes it from other parts? What characteristics does it have in common with them?

2. Now have pupils study the other sub-regions of the West. Perhaps divide the class into groups to do this. They should use maps, textbooks and other references to identify the chief characteristics of their sub-region and perhaps to study some of the major cities of the region. Each group should also be sure to note ways in which its region is tied to other parts of the West, the country as a whole and to the world by trade relationships.

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MATERIALS

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Borchert and McGuigan, Geog. of the New World, pp. 256-297.

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G. A region is an area of one or more homogeneous features. The core area is highly homogeneous, but there are transitional zones where boundaries are drawn between different regions.

G. Man uses his physical environment in terms of his cultural values, perceptions and level of technology.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

Let each group then make a presentation to the class, using maps, pictures, and any other devices they wish to clarify the major characteristics of their area. Afterwards have the group decide how to fill in the appropriate spaces for each sub-region on the Regional Chart which the class began during their study of the Midwest.

As the committee reports on the Great Plains area, you may also wish to do the following:

a. Ask: How do these plains areas differ from those of the Midwest?

b. Tell pupils very briefly that men traveled across the plains but did not stop there during the early days of western expansion. Explain why. Ask: Which is more important: what the physical features of an area are actually like or how people think about these features?

After the committee on the Mountain Region has presented its information, you may wish to do one or more of the following:

a. If the committee has not done so, show the film: The Rocky Mountain Area: Backbone of the Nation. It stresses the importance of the Rocky Mountain area as a source of water for domestic and industrial use and as a source of pasture for people living in the West This area's "gifts" to the entire nation include minerals, lumber, and vacation lands. This film includes beautiful photography of the landscape. Discuss the relationship between the mountains and the surrounding area. What do the mountains provide for the rest of the country?

Film: The Rocky Mountain Area: Backbone of the Nation, 16 min., McGraw-Hill

b. Encourage pupils, who have visited the area, to share their observations and pictures with the rest of the class.

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G. Men carry on more activities on plains than in hills and more in hills than in mountains except in the low latitudes.

G. A region is an area of one or more homogeneous features. The core area is highly homogeneous, but there are transitional zones where boundaries are drawn between different regions.

G. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena, and some on the basis of functional relationships.

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G. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena, and some on the basis of functional relationships.

c. Discuss: How does the Rocky Mountain area differ from the Appalachian Mountain area? Why is the mountain area so sparsely populated?

3. Have pupils look at the Regional Chart and at the maps once again. Does this breakdown into sub-regions make sense? What criteria have been used to regionalize the West in this fashion? Do these five sub-regions have enough in common to set them off within one region of the West as compared with the other regions of the United States which they have studied? What features characterize most of the West? Are the regions which lack these features enough like the other regions on the basis of other characteristics to group them with the region of the West?

4. Have pupils think of other ways of regionalizing the West. Perhaps divide the class into groups, each to regionalize the West as it thinks best. Each group should prepare a map and list of reasons for its system of regionalization Compare the maps in class. Perhaps, if no group has done so, show the class a map regionalizing the West into the Great Plains, the Southwest, and the Northwest. Ask: On the basis of what you know about the West, what basis do you see for this form of regionalization? How do the criteria used differ from those used in the regionalization system which you have studied in some detail? From the criteria used by the different groups?

   Discuss: Which system of regionalization of the West do you prefer? Why? Might different systems of regionalization be better for different purposes? Why or why not?

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G. Phenomena are distributed unequally over the earth's surface, resulting in great diversity or variability from one place to another. No two places are exactly alike.

G. Regions are interdependent; they depend upon each other for goods and services and for markets for their own goods.

G. People in most communities of the world depend upon those who live in other communities, regions and countries for goods and services and for markets for their own goods.

m data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

5. Perhaps have several pupils present reports on Hawaii and Alaska. They should compare these areas with the regions already studied.

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pp.

6. Now have pupils look at the completed Regional Chart. Does this regionalization of the United States make sense to them, or would they prefer some other set of regions? If they wish to regionalize the country differently, how would they do it? What criteria would they use?

7. Point out that the class has looked at ways in which each of the regions is tied to other parts of the country and to the world. Discuss: Do you think these regions are more or less interdependent today than they were in earlier times? Why? Do you think they are more or less dependent upon other countries? Why?

8. Conduct a review discussion on the topic of cities. Appropriate questions would seem to be: What is necessary to have a city? Why have some towns grown into large cities and other become "ghost towns"? What part do physical features play in the location of a town? What part does man play in the locating of a town? Can you give examples from among the cities you have studied?

9. Read aloud a quotation from some book which presents a geographical deterministic interpretation of why people live as they do in some part of the U. S. Discuss: Do you agree with this author? Why or why not? What factors

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y studied.

Borchert and McGuigan,
Geography of the New World,
pp. 300-312.

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author? Why or why not? What factors

affect how man uses his physical environment? How has man changed his physical environment? What possible inventions or technological developments might lead to even greater changes in the use of each region we have studied? What other kinds of developments might lead to changes in man's use of the physical environment in the U. S.?

S. Generalizes from data.

OPTIONAL APPROACH NO. 2

1. If pupils have studied all three case studies, or two of them, let them compare these sub-regions at this time. What characteristics do they have in common? How do they differ? Does it make sense to distinguish between these two areas as sub-regions of the West?

2. Not procede with activities #1-9. Listed under optional approach No. 1.

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Grade Five
Unit V: The West
Sub-unit A: Case Study on Phoenix

RESOURCE UNIT

These materials were developed by the Project Social Studies Center of the University of Minnesota under a special grant from the U.S. Office of Education. (Project HS - 045)

INTRODUCTION

This resource unit on the West includes three case studies and as a region. In order to go into some depth, the teacher shoul one of the case studies for class study. Individual pupils mi cities briefly, as they study the West as a whole.

A number of factors might influence the choice of the case stu living in the Intermountain Region or the Plains should probab living on the coast should study the region in which tney live. For pupils living in the Midwest, South, different criteria must be used in making the selection. er may wish to have pupils study either Los Angeles or Phoenix upon irrigation agriculture. However, the choice may be made est.

If the teacher decides to use only one of the case studies, he study the last section in each, in which pupils look at the sub just studied and list its chief features on a chart. They shou sub-unit on the West as a region and compare the region they ha other parts of the West, using the chart to summarize their fi vide up into groups or each pupil might study the growth of a region from the one already studied. These studies of cities s pare the sub-regions and decide whether or not the different su in common to be grouped together within one region, and if so, in so grouping them.

The teacher may decide to have pupils study all three of the ca them try to compare the sub-regions, noting similarities and di turn to the study of the sub-unit on the West as a whole. They the activities in the sub-unit on the West and focus upon the perhaps investigating briefly some of the major cities in this it with the others.

Naturally, the teacher may wish to develop a different case stu as these, for the study of the immediate region within which pu a teacher in a city or town of the Great Plains may wish to foc

INTRODUCTION

West includes three case studies and a sub-unit on the West
go into some depth, the teacher should probably select only
or class study. Individual pupils might analyze the other
tudy the West as a whole.

influence the choice of the case study. For example, pupils
in Region or the Plains should probably study Phoenix. Those
d study the case study for the sub-
. For pupils living in the Midwest, the Northeast, or the
must be used in making the selection. In this case, the teach-
s study either Los Angeles or Phoenix, because of the emphasis
re. However, the choice may be made in terms of pupil inter-

use only one of the case studies, he should have the class
each, in which pupils look at the sub-region around the city
chief features on a chart. They should then turn to the
region and compare the region they have just studied with the
using the chart to summarize their findings. Pupils might di-
ch pupil might study the growth of a city in a different sub-
dy studied. These studies of cities should help pupils com-
decide whether or not the different sub-regions have enough
ogether within one region, and if so, what criteria are used

have pupils study all three of the case studies. If so, have
ub-regions, noting similarities and differences, before they
sub-unit on the West as a whole. They might then omit most of
-unit on the West and focus upon the Great Plains sub-region,
efly some of the major cities in this sub-region and comparing

y wish to develop a different case study, along the same lines
f the immediate region within which pupils live. For example,
wn of the Great Plains may wish to focus upon the nearest large

city. Or a teacher in the Northern Coastal region may wish to focus upon a city closer to them than Seattle. Similarly, teachers in other parts of California may wish to use a different city than Los Angeles. If such a case study is developed to fit the local situation, it should follow the general format of these case studies and should teach similar concepts and generalizations.

OBJECTIVES

This unit should make progress toward developing the foll

CONCEPTS

1. Globalism: seasons.
2. Location:
    a. Position: longitude, latitude.
    b. Situation: distance, direction, relationships.
    c. Site: elevation; landforms (valley, mountains); water (river); climate (rainfall, temperature, humidity, wind velocity, seasonal variations); soil (types, alkalization from irrigation); vegetation (desert).
3. Cultural use of environment: population density, land use, urbanization, suburb, industrial development, specialization, diversification.
4 Diversity-variability: central place functions.
5. Change: physical, man-made (dams, construction of railroads, irrigation).
6. Interrelat
trade, mar
7. Culture:
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GENERALIZATION

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* Introduced for first time in this curriculum. Others a
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OBJECTIVES

progress toward developing the following objectives:*

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onment: population
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t, specialization,

: central place

n-made (dams, con-
s, irrigation).

6. Interrelatedness: areal association; trade, market, interdependence.

7. Culture: values, perceptions, technology, change, difussion..

GENERALIZATIONS

1. Every place has three types of location: position, situation, and site.
    a. Places can be located in terms of their situation; situation describes a phenomenon in areal relationship with other phenomena with which it is associated, including distance and direction from such phenomena.
    b. Things can be located at specific points or positions on the earth's surface, usually designated by an abstract grid and described in terms of latitude and longitude.
    c. Places can be located in terms of site which relates a phenomenon to the detailed physical setting of the area it occupies.

st time in this curriculum. Others are reviewed from earlier
designed to increase depth of understanding.

2. Temperature is affected by such factors as distance from the equator, elevation, distance from warm water bodies, prevailing winds, and physical features which block winds from certain directions.

    a. Temperature and seasonal differences are affected in part by distance from the equator; temperature ranges are smaller near the equator than further away from it.

*3. The degree to which people are made uncomfortable by hot or cold temperatures is affected by the amount of humidity and by wind velocity.

4. Rainfall is affected by factors such as distance from bodies of warm water, wind direction, temperature, ocean currents, and physical features which block winds carrying moisture.

5. Soil in a particular place is affected by the type of basic rock in the region, the climate, vegetation, erostion, wind, glaciers, and rivers which move soil, as well as by how man treats the soil.

6. What can be grown is affected in part by the soil of an area.

7. Vegetation is affected in part by temperature and rainfall.

    a. Deserts may be caused by too-little rain.

is affected by such factors
from the equator, eleva-
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may be caused by too-little

8. Nature changes the face of the earth through physical processes.

9. The value of land tends to be related to a number of factors such as moisture, soil, temperature, and growing season, population density, and transportation facilities.

10. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

    a. Man changes the character of the earth.

        1) Irrigation makes it possible to grow crops on land which otherwise would be too dry.

    b. Machinery and power make possible greater production per person.

    c. The significance of location depends upon cultural developments both within and outside of an area.

        1) A change in situation brings about a corresponding change in the use of a site.

    d. A number of factors -- climate, surface features, natural resources, accessibility, and history -- affect settlement patterns.

11. When people migrate from one place to another, they take their culture with them.

12. When people are in direct contact with one another, they tend to borrow cultural traits.

13. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

    a. The growth of factories or other businesses in a town attract people, stores, etc., which in turn make the area more attractive to new factories and businesses and also stimulate the growth of old ones.

    b. Factories must have some form of power to run machinery.

        1) Power for industry is obtained from a number of sources, including water power or steam and electricity produced by burning coal.

14. A place needs cheap and rapid transportation in order to carry on much trade with other places.

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a. Improved transportation facilities make possible wider and bigger markets as well as better and less costly access to resources.

15. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

*16. A town or city may serve as a central point to which produce comes from a hinterland and for distribution to other places and to which supplies come from other places for distribution to the hinterland. The central place gathers, stores, and ships goods. It may also process goods and provide services for the region which it serves.

17. Specialization of individuals and regions makes for interdependence.

   a. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

   b. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

   c. Diversification of production makes a company of a region less dependent upon price fluctuations for one product or upon the supply of specific resources.

18. Business enterprises (or states) may compete with each other by heavy advertising to make their products better known or increase the demand for their product rather than for competing goods.

19. Business enterprises (or governments) may compete with each other by trying to improve the quality of their product.

20. Governments provide many services which people cannot provide for themselves.

*21. Archeologists use a variety of techniques to date remains and to try and figure out how early men lived.

SKILLS

The broad skill toward which teaching is ultimately directed is underlined. A specific aspect of a skill is in plain type.

1. Attacks problems in a rational manner.

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- a. Sets up hypotheses.
- b. Sets up ways of testing hypotheses.

2. Locates information.
   - a. Uses appropriate reference works to locate different types of information.
3. Gathers information.
   - a. Gains information by conducting simple experiments.
   - b. Gains information by using models.
   - c. Interprets graphs.
   - d. Draws inferences from tables.
4. Uses effective geographical skills.
   - a. Has a sense of area.
     - 1) Compares areas.
   - b. Interprets maps.
     - 1) Interprets map symbols.
     - 2) Tells directions from maps.
     - 3) Orients maps.
     - 4) Uses map scale.

5) Draws inferences from maps by applying previously-learned concepts and generalizations.

6) Draws inferences from a comparison of different map patterns of the same area.

c. Uses atlas index to locate places.

5. Has a sense of time.

   a. Makes and interprets timelines.

6. Evaluates sources of information.

   a. Checks on the bias and competency of witnesses and authors.

7. Organizes and analyzes data and draws conclusions.

   a. Applies previously-learned concepts and generalizations to new data.

   b. Classifies data.

   c. Tests hypotheses against data.

ATTITUDES.

1. Is curious about data.

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IS SCEPTICAL OF THE FINALITY OF KNOWLEDGE; CONSIDERS GENERALIZATIONS AND THEORIES AS TENTATIVE, ALWAYS SUBJECT TO CHANGE IN THE LIGHT OF NEW EVIDENCE.

APPRECIATES AND RESPECTS THE CULTURAL CONTRIBUTIONS OF OTHER COUNTRIES, RACES, AND RELIGIONS.

OBJECTIVES

A. IS CURIOUS ABOUT DATA.

S. Uses atlas to locate places.

S. Tells directions from maps.

G. Every place has three types of location; a position, a site, and a situation.

G. Things can be located at specific points or positions on the earth's surface, usually designated by an abstract grid and described in terms of latitude and longitude.

G. Places can be located in terms of their situation; situation describes a phenomenon in areal relationship with other phenomena with which it is associated, including distance and direction from such phenomena.

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OUTLINE OF CONTENT

I. Phoenix is located in Southwestern United States in the Inter-mountain region on the edge of the desert. Its site has been both a detriment and and advantage to it over the years, depending upon the level of technology and changes in how people lived and moved about in other parts of the country.

A. Phoenix is located at 112 W longitude and 33 N latitude in the Inter-mountain region of the Southwest.

TEACHING PROCEDURES Alternative #1 for organizing.	MATERIALS
1. Ask if any pupils have ever been to Phoenix or to the Southwest. If they have, let them describe their impressions of the region or city. If not, ask them what they have heard of the city. Write their impressions on a large piece of chart paper for future reference.	
2. Review with students the use of an atlas index to locate a place on a map. Now have a pupil look up Phoenix in the index, find out its longitude and latitude, and locate it on a map on the atlas and also on a wall map. Ask: In what direction is Phoenix from our hometown? How do you know?	Atlas, and physical or relief wall map of the U.S.
3. Ask: In what state is Phoenix? Remind pupils of the region they looked at in the overview. Review with students what they have learned already about the region within which Phoenix is found.	

G. Places can be located in terms of the site which relates a phenomenon to the detailed physical setting of the area it occupies.

S. Sets up hypotheses.

S. Sets up ways of testing hypotheses.

G. Temperature is affected by the distance from the equator, elevation, distance from warm water bodies, prevailing winds, and physical features which block winds from certain direction.

G. Temperature and seasonal differences are affected in part by the distance from the equator; temperature ranges are smaller nearer the equator than further away from it.

S. Interprets graphs.

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B. Phoenix is located on a flat river valley between mountains in a desert region of high temperatures and low humidity.

1. Phoenix is warm in winter and hot in summer and has more days of sunshine than any other city in the United States.

4. Place a road map of Arizona on the bulletin board. As the unit progresses, mount pictures of different sections around it, connected by strings to appropriate locations. Also provide an inset map of the Phoenix area and gradually add pictures around it to illustrate what the valley looks like. Remind them that these pictures help them understand the site on which Phoenix has grown.	Road map of Arizona.
5. Have pupils trace the line of latitude on which Phoenix is located across the U.S. to find other cities which they have studied which are located somewhat close to this latitude. What was true about the temperature of these other cities? What might they expect to be true about the temperature of Phoenix if they considered only latitude? What other factors might affect temperature? Is Phoenix close enough to the Pacific to get a cooling effect from it in the summer time? Have pupils examine the elevation of Phoenix. Is Phoenix high enough to have cool temperatures despite its latitude? (Let pupils set up hypotheses to test. Have them figure out how to test these hypotheses.)	Physical or relief map o U.S. "Student Almanac."
6. Perhaps project a table showing low and high temperatures in Phoenix for January and July. Compare to a similar table for some other cities pupils have studied and with their home city. What would it be like to live in Phoenix in the winter time? in the summer time? How would they live differently than at home? What would they need to live comfortably in Phoenix in the summer?	For Arizona, adapt from table in Cross, et. al., Arizona, Its People and Resources, p. 82.
7. Have a pupil keep a record of daily temperatures and precipitation in Phoenix during the course of the unit. He can locate this information under the weather map in the newspaper. He should make a graph to illustrate this data.	

S. Draws inferences from maps by applying previously-learned concepts and generalizations.

G. Temperature is affected by elevation,...

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Rainfall is affected by distance from bodies of water, wind direction, temperature, and physical features which block winds carrying moisture.

S. Draws inferences from maps by applying previously-learned concepts and generalizations.

S. Tests hypotheses against data.

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2. Phoenix is in a desert region. It averages about 8 inches of rainfall a year, with very low humidity most of the time.

He might make a similar graph of temperature and precipitation in his home town for purposes of comparison. Have the class examine the graphs and note the differences between Phoenix and their hometown.	
8. Have pupils look up a table showing temperatures for some other cities in Arizona. Ask: How does Phoenix compare with some of the northern cities of the state? Why? Have the class examine a physical map to see if they can answer this question.	"Student Almanac." Physical map of Arizona or U.S.
9. Project a table showing the average percentage of sunshine in Phoenix and some other cities in this country. Why would this amount of sunshine make Phoenix attractive to Americans today? Would it always have made it seem attractive? Why or why not?	Cross, et. al., *Arizona, Its People and Resources*, p. 375.
10. Have pupils look at a physical map and try to figure out from generalizations learned earlier in the year what the rainfall would be like in Phoenix and the rest of Arizona. Have them check their ideas against a rainfall map and table of rainfall. Compare with the rainfall in their own city or state and with that in other places they have studied during the year.	Physical map of U.S. Rainfall map of Arizona. "Student Almanac."

G. The degree to which people are made uncomfortable by hot or cold temperatures is affected by the amount of humidity and by wind velocity.

G. Nature changes the face of the earth through physical processes.

S. Sets up hypotheses. 3.

S. Applies previously-learned concepts and generalizations to new data.

G. Vegetation is affected in part by temperature and rainfall.

G. Deserts may be caused by too little rainfall.

S. Sets up hypotheses.

S. Tests hypotheses against data.

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3. Phoenix is able to grow crops because of irrigation from rivers flowing through the valley from the mountains to the northwest.

11. Remind pupils of some of the damp summer days they have known. Or get them to think about the humidity in a bathroom after they have had a steaming bath. How does high humidity affect them in hot weather? Now have them examine a chart comparing humidity in Phoenix and their home city. Quote one author to the effect that temperatures of 110 or above in Phoenix's low humidity is less uncomfortable than a temperature of 90 with 80 per cent humidity. Ask if any pupils have lived or traveled in Southwestern dry areas in the summertime. How did they feel in high temperatures? What else besides humidity would affect how high temperatures affect people's comfort?

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12. Tell pupils that this area of Arizona was once a huge swamp before the Rocky Mountains were formed. Explain how we know this and how the area was changed.

13. Ask: From what you have learned about temperatures and rainfall, what would you expect this area around Phoenix to look like? How easy do you think it would be to grow crops? (Let pupils set up hypotheses.)

14 Paraphrase a description of a storm in Phoenix, perhaps using a photo to illustrate. Have pupils use a map to try to figure out where the storms come from. Then

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Humidity charts on p. 375 of Cross, et. al., Arizona, Its People and Resources.

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Cross, Arizona, Its People and Resources, pp. 80-81.

S. Sets up hypotheses.

G. Deserts may be caused by too little rainfall.

S. Sets up hypotheses.

S. Tests hypotheses against data.

S. Draws inferences from maps by applying previously-learned generalizations and concepts.

S. Draws inferences from maps by applying previously-learned concepts and generalizations.

show them a map showing the direction of the storms.

Read aloud some of the advertising material put out by Arizona associations on the kind of precipitation which Phoenix gets.

15. Project slides or pictures to show the desert region close to Phoenix. Ask: How could a city develop in such a region? Why would anyone want to live there?

16. Now that pupils have examined the climate and seen pictures of what the desert nearby looks like, ask: Do you think that Phoenix would be a large or small city? Why?

    Show a slide or picture of an aerial view or picture taken from a nearby mountain of Phoenix today. Ask: How could such a large city develop in this area? (Let pupils set up hypotheses.)

17. Project a picture showing a lush green lettuce field near Phoenix. How can pupils explain this green field in an area of such little rainfall? Let pupils try to figure out by examining a physical map. (Try to get them to see the possibilities of using river water.)

18. Ask pupils where they think these rivers get their water? Let them examine a physical map to try to decide. Ask: Why would there be water to feed the rivers in such mountain areas?

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rtising material put out by kind of precipitation which	Arizona and Phoenix advertising leaflets.
to show the desert region w could a city develop in nyone want to live there?	e.g. See Arizona Highways, March, 1964, p. 19, top picture. (Slides also available.)
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an aerial view or picture n of Phoenix today. Ask: develop in this area? (Let	
lush green lettuce field lsexplain this green field ainfall? Let pupils try to hysical map. (Try to get es of using river water.)	Physical map of U.S. Photo In Arizona Highways, March, 1964, p. 41. (Also available as a slide.)
these rivers get their wa- ysical map to try to decide. ter to feed the rivers in	Physical map.

G. Man changes the character of the earth.

G. Irrigation makes it possible to grow crops on land which otherwise would be too dry.

S. Gains information by conducting simple experiments.

19. Ask: How might people get water from rivers to irrigate their land? (Review what they have learned from a study of a village in India in grade four and of the Quechua and Japanese in grade one.) What other ways can pupils think of for irrigating land? (Be sure pupils understand the concept of irrigation. Perhaps have pupils make a plan for irrigation with a large sandtable or pan with dirt and water. Or ask pupils to think of how they have played on sandy beaches and made paths for water to come inland from the lake or river by digging a channel or ditch.) Ask: How easy would it be to build irrigation ditches to water large areas of land away from the river?

Fill a tray with black dirt. Have pupils construct an irrigation project by making furrows in the soil and planting either seeds or seedlings in between. Do not allow the seeds to receive water except by the means of "irrigation ditches." Ask: How do the seeds get the water?

See Bar
Geog. o
p. 287
irrigat
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furrows

Ask pupils to discuss any irrigational projects carried on in their community. Focus attention on the fact that "watering" the lawn is a form of irrigation. Why do we irrigate? What is the alternative? Compare the amount of the water bill for the average suburban dweller during the summer with the bill for the winter months. Why the difference?

20. Project a map of Phoenix and its vicinity so that pupils can see more clearly the mountains and the route of the Salt River and of the Gila River. Also have pupils find some of the major canals on the map.

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See Borchert and McGuigan, Geog. of the New World, p. 287 for a picture of an irrigation project in the Central Valley which uses furrows.

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the mountains and the route of the
Gila River. Also have pupils find
als on the map.

e.g. See WPA Guide, Arizona, The Grand Canyon State, pp. 232-233.

S. Sets up hypotheses.

S. Gains information by conducting simple experiments.

S. Tests hypotheses against data.

G. Soil in a particular place is affected by the type of basic rock in the region, the climate, vegetation, erosion, wind, and rivers which move soil as well as by how man treats the soil.

G. What can be grown is affected in part by the soil of an area.

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4. The soils in the Salt River Valley are alluvial and very rich.

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21. Tell pupils that the name for the Gila River was the Spanish shortening of the Indian name Hah-quah-sa-eel which meant "Running Water Which Is Salty." Also point out that the river has gone by a number of names including "The River of Despair" and "Poison." What do these names indicate about the water in the river?

Ask: Why might a river be called the Salt River? Why might it be salty? What might happen if water from the Salt River were used heavily in irrigation? (Ask pupils if they have ever seen what happens when salt water is thrown on green grass. Perhaps have them run an experiment with two pots of green grass, one of which they water daily with salt water and one of which they water with regular water.) Ask: Would the water in the river be likely to contain so much salt? Why not?

Have several pupils check a description of the Salt River to find out why it is salty.

"Select

22. Ask pupils what difference the type of soil makes in growing things. What have they noticed in their own area or yards about differences in soil types. Now tell pupils something about the rich soils of the Salt River Valley and how they were produced.

Project a color picture or slide which shows crops growing on the typical red soils of the valley.

Arizona
p. 40. (
slide.)
Feb., 1

23. If possible obtain a sample of some of the rich alluvial soils of the valley close to Phoenix. Have pupils place the soil in a pot to grow some plant. Pupils could use other soil samples from their own state and elsewhere to grow similar plants, watered equally, and given the same amount of sunshine. How does the soil of the Salt River

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"Selected Readings on Phoenix."

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Arizona Highways, March, 1964, p. 40. (Also available in slide.) Arizona Highways, Feb., 1967, pp. 30-31.

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S. Interprets map symbols.

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S. Uses map scale.

S. Sets up hypotheses.

S. Applies previously-learned concepts and generalizations to new data.

S. Gains information by using models.

G. Climate is affected by physical features which block winds.

symbols.

5. Phoenix is located in a flat, oval valley about 40 miles long (east-west distance) and 20 miles wide (north-south distance). The valley slopes very gently to the southwest and is surrounded by mountains.

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Valley compare with the others?

24. Have pupils examine the physical map. Can they tell from it what kind of landscape is found in and close to Phoenix? Why? Now have them examine a relief map. What does this map tell them about what the landscape looks like?

25. Project several slides or pictures of Phoenix to illustrate the flat land. Tell pupils the direction in which they are looking. What do they see in a distance? Now have pupils examine a relief map to note the mountains which surround Phoenix. Have pupils use the scale on the map to figure out how long and wide the valley is in which Phoenix is located.

    Ask: Would the surface features in the Phoenix area make it more difficult or easier to irrigate than to irrigate very rough, hilly land? Why?

26. Tell pupils that the Salt River Valley slopes gently in one direction. Have them try to decide from a physical map how it slopes. If necessary, ask them in what direction the rivers flow through the valley and desert. What would this mean about the slope of land? (You may wish to review river flow by use of a demonstration in a sandbox or large pan.)

    A pupil might make a clay relief model or a sandbox model showing the Salt River Valley with surrounding mountains. Have the class compare the model with the map in order to help them understand the map and the river system better.

27. Have pupils examine the model or the relief map to note the bowlike effect created by the mountains around the valley. Ask: What effect would these mountains be like-

the others?	
the physical map. Can they tell from dscape is found in and close to Phoe- e them examine a relief map. What them about what the landscape looks	Physical map or a relief map of Arizona or of the U.S.
des or pictures of Phoenix to illu- d. Tell pupils the direction in ing. What do they see in a distance? mine a relief map to note the moun- d Phoenix. Have pupils use the figure out how long and wide the Phoenix is located.	Arizona Highways, March, 1964, Cover and pp. 4, 5, 6, 7, 8, 9, and inside back cover. (Also available in slides.)
face features in the Phoenix area ult or easier to irrigate than to , hilly land? Why?	
e Salt River Valley slopes gently in e them try to decide from a physical If necessary, ask them in what di- flow through the valley and desert. n about the slope of land? (You may r flow by use of a demonstration in pan.)	Physical map of U.S. or of Arizona.
a clay relief model or a sandbox model ver Valley with surrounding mountains. are the model with the map in order to d the map and the river system better.	
the model or the relief map to note created by the mountains around the effect would these mountains be like-	Model of Salt River Basin. Relief map of Arizona or of the U.S.

S. Tells directions from map.

S. Orients maps.

S. Sets up hypotheses.

C. T
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G. Situation describes a phenomenon in areal relationship with other phenomenon with which it is associated.

G. The significance of location depends upon cultural developments both within and outside an area.

S. Uses map scale.

S. Sets up hypotheses.

S. Sets up ways of testing hypotheses.

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C. The importance of Phoenix's location or situation has varied with changes in other parts of the country as well as with changes within the Phoenix area itself.

ly to have upon winds? Quote sources on the low wind velocity in Phoenix during most of the time.

For quotatio
Guide, Arizo
Canyon State

28. Perhaps get copies of the Valley National Bank advertising booklet on Scenic Auto Trips From Phoenix. Have pupils make a large map of Phoenix and its vicinity and then use the inset maps of this booklet to add details of spots of interest and mountains to their map. This will necessitate a review of the use of the compass rose to indicate directions and ways of orientating maps.

Scenic Auto
large sheet
projector.

29. Have pupils look once again at a physical-political map of the U.S. What states are close to Arizona? Would there be any advantage to being so close to California and Los Angeles or to Texas? Why or why not? If you were a manufacturer, what disadvantages would you have if you wanted to sell goods in the eastern part of the country? Have pupils use a map scale to estimate the distance to key industrial cities in the east. Compare to distances from other cities they have studied. Would it be wiser to produce small, lightweight goods or heavy industrial products? Why? How would the importance of the situation of Phoenix change as population increased in California and Texas? Suppose that almost no one lived in these two states? Would the location of Phoenix have the same advantages? Why or why not? (Let pupils set up hypotheses to check later.)

Political-ph

Alternative #[illegible] for Organizing Part I of Unit (Can be used if no pupils have ever been to Phoenix or if they differ widely in their impressions of Phoenix.)

a. Ask pupils if they have ever been to Phoenix. If no one has been there, ask them if they have ever heard of the city. If so, ask what they think it is like.

Quote sources on the low wind
ring most of the time.

For quotation, see W.P.A. Guide, Arizona, The Grand Canyon State, p. 121.

the Valley National Bank advertis-
uto Trips From Phoenix. Have pu-
of Phoenix and its vicinity and
s of this booklet to add details
nd mountains to their map. This
iew of the use of the compass rose
and ways of orientating maps.

Scenic Auto Trips From Phoenix; large sheet of paper, opaque projector.

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Political-physical map of U.S.

ng Part I of Unit (Can be used if
Phoenix or if they differ widely
enix.)

ave ever been to Phoenix. If no
ask them if they have ever heard
ask what they think it is like.

S. Uses appropriate reference works to locate different types of information.

S. Tests hypotheses against data.

See generalizations opposite appropriate topics above for generalizations to be developed by the research.

S. Sets up hypotheses.

S. Tests hypotheses against data.

S. Sets up hypotheses.

Write the suggestions on the chalkboard. Unaoubtedly, some of them will differ. If so, ask: How can we find out which of these suggestions are correct?

Let pupils suggest areas of study which are needed and types of references which they can use to check on each. Let them organize groups to do the research. (If the pupils have suggested a number of conflicting ideas about Phoenix, and if the teacher asks questions about topics which they have not mentioned, the class will probably suggest most of the topics for study which are suggested in part one of this unit.)

b. If pupils have not already investigated vegetation, ask them to try to figure out what vegetation would be like, given the climate of the Phoenix area. Then show the class a picture of a retirement suburb with a green gravel lawn and other suburbs with irrigated citrus trees. Ask: What might account for the difference?

Roose and Sisson, "Arizona: Booming Youngster of the West," pp. 340, 342-43.

c. As pupils discuss the irrigated lands, ask: Where might the city get its water for irrigation? Pupils are likely to suggest rivers or lakes. Have pupils study the pattern of rivers on a map of Phoenix. Then ask: What things would be important when considering whether or not a river can be used for irrigation? Have pupils suggest the qualities needed. If necessary, ask additional questions to bring out such factors as amount of water, steady flow of water throught the year, purity of water, etc.

Tell the class the name of the river which flows through Phoenix. Ask: How useful do you think such a river would be for irrigation, if the river lives up to its name? Why? Have pupils carry out the experiment suggested in activity #21 above.

G. Archeologists use a variety of techniques to date remains to and to try to figure out how early men lived.

A. IS SCEPTICAL OF THE FINALITY OF KNOWLEDGE.

G. Man changes the character of the earth.

G. Soil in a particular place is affected by the type of basic rock in the region, the climate, vegetation, erosion, wind, and rivers which move soil, as well as by how man treats the soil.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

II. We look at
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II. We look at the site of Phoenix in 1300 A.D., almost two hundred years before Columbus discovered America.

A. The Hohokam Indians had developed a metropolitan civilization in the Gila River and Salt River valleys; this civilization was based upon extensive irrigation canals.

B. The Hohokam Indians did not have the technical developments to prevent eventual water logging of the land or to combat alkalization of the soil.

Now say: Even though you think the Salt River would not make a very good source for irrigation, it has been used for irrigation. We are now going to look at how the Indians and later the White men used this area and finally developed a large city here. Pupils should try to decide whether the Salt River meets their other qualifications for a good source for irrigation.

30. Tell the pupils that they are going to see how the earliest men we know about lived in this area. Ask: How do you think we know about these early people since they were no longer there when the white men came? Review what pupils learned from their study of the Twin Cities unit. Perhaps have several pupils or the entire class read about the ways in which archeologists have studied early man. Or show a film to illustrate methods used. Or build up an archeological layer pan, with certain things buried in lower levels, etc. Then have pupils find out how archeologists can figure out a time for objects found. Discuss: Why may our ideas about the Hokokam Indians change in the future?

31. Have pupils read descriptions of the way in which Hohokam Indians developed irrigation works and the theories about why this irrigation civilization finally disappeared. Or have them read just about the irrigation works and then point out that the Indians finally left. What might account for this? Point out that archeologists tell us that these Indians seem to have built some villages, abandoned them and moved close by to build new villages, abandoned them and moved again long before they moved out of the region. Would continued drought help explain such moves or the final movement out of the area? What might have happened? Have pupils read further to find out about current theories about what happened as the result of continued irrigation without modern equipment to

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pp. 28
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"Selected Readings on Phoenix."
Pare, et.al., Arizona Pageant,
pp. 285-86; Cross, et.al.,
Arizona, Its People and Re-
sources, pp. 6-9; Corle, The
Gila, pp. 20-31.

S. Sets up hypotheses.

S. Tests hypotheses against data.

A. APPRECIATES AND RESPECTS THE CULTURAL CONTRIBUTIONS OF OTHER COUNTRIES, RACES, AND RELIGIONS.

G. Man uses his physical evnironment in terms of his cultural values, perceptions, and levels of technology.

III. We look

G. The significance of location depends upon cultural developments both within and outside an area or region.

S. Sets up hypotheses.

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G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

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III. We look at the site of Phoenix in 1864.

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A. At the site of Phoenix there was a tent pitched at a hay camp set up to make use of the river water and valley land to provide hay for the fort at Camp McDowell, some 30 miles away.

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B. There were a few scattered groups of Indians living in the surrounding area by means of irrigation; however, the groups were much less technically advanced than the older groups had been and were of a different tribe.

pump out water or control salinity.

32. Quote an early visitor to Arizon who reported to Congress in 1858 that "The region is altogether valueless. After entering it, there is nothing to do but leave." What do you think this man may have overlooked about the area? Why do you think he may have made this statement ? (Perhaps divide the class into groups to discuss these quotations. Tape-record their discussions.)

33. Project a physical map showing the site of Phoenix and of Camp McDowell and of the rivers and mountains in the area. Ask: Why do you think the government may have set up a fort here? What would be needed to supply this fort? Where would it get supplies? What kinds of supplies would it need for its horses? Would it pay to transport these supplies from long distances? Why or why not?

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Tell pupils that in 1864 there was a single tent pitched at the site of present-day Phoenix. It was set up by a man who had a contract to provide hay to the army fort at Camp McDowell, some 30 miles away. Ask: Why do you think the hay camp was set up here?

34. Quote General Kearney's comments about the Pima Indians he found in 1846 living near what is now Pheonix. Were these the same Indians who had lived here before?

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Arizon who reported to Congress
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Physical map of valley.
Or see map of Phoenix Vicinity
in W.P.A. Guide, Arizona, The
Grand Canyon State.

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See appendix.

S. Makes and interprets timelines.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

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C. There were a few mining prospectors moving in and out of the valley, looking for gold and copper in the Gila River region.

IV. We look at Phoenix from 1870 to 1887.

A. By now the town had a population of over two thousand, including eleven lawyers and six doctors. It had over 15 stores, a hotel, four restaurants, three bakeries, two tinsmith shops, several stone mason and bricklayer shops, two livery stables, a mule-drawn street railway, an electric plant and a newspaper. Over 15,000 acres of land were being irrigated nearby. The city had also just been connected with the east by a railroad.

Tell the class a little about how the Pima used the land, or have them read a brief paragraph description. Were they as advanced as the earlier Indians in irrigation? What might account for the difference?

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35. Have a pupil make a simple timeline to show when we think the Hohokams lived in the Salt River Valley. Have him add the date for when white men found other Indians living in this valley. He should also add the date for the establishment of the hay camp.

36. Read aloud V. Ross Browne's account of the early prospectors who were looking for gold in the Gila River valley at this time. Put figures on the chalkboard to show that there had been a good deal of production of such minerals in Arizona prior to 1864. Show maps of some of the early gold discoveries. Ask: Why would people come into the Gila valley when not much had been produced here earlier ? Show a map indicating some of the places where copper was found close to the site of Phoenix.

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37. Have pupils read a description of Phoenix in 1887. Ask: Why do you think Phoenix grew into a town this large in about 20 years?

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about how the Pima used the land, f paragraph description. Were earlier Indians in irrigation? ne difference?	Pare, Arizona Pageant, p. 176.
le timeline to show when we think e Salt River Valley. Have him ite men found other Indians living d also add the date for the es- amp.	
e's account of the early prospec- gold in the Gila River valley es on the chalkboard to show that al of production of such miner- 864. Show maps of some of the Ask: Why would people come in- not much had been produced here dicating some of the places where the site of Phoenix.	See Appendix for quotations. Cross, et.al., Arizona, Its People and Resources.
ption of Phoenix in 1887. Ask: grew into a town this large in	"Selected Readings on Phoenix."

S. Tests hypotheses against data.

G. Man changes the character of the earth.

G. Types of agriculture in a region depend upon man's cultural values, perceptions, and level of technology as well as upon climate, soils, and topography.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. The value of land tends to be related to a number of factors such as moisture, soil, temperature, and growing season, population density, and transportation facilities.

S. Checks on bias and competency of witnesses.

S. Compares areas with known areas.

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B. A town was plotted soon after a company was organized to re-open and expand the old Hohokam irrigation canals; the town expanded as some men came into the area to farm.

38. Now have pupils begin checking their ideas by reading a description of the irrigation company which opened up the old ditches and began settling the Phoenix area. Ask: Why might these people go to such great efforts to clear out these ditches and set up farms in the valley?

Tell pupils that Arizona has a collection of pictures showing men in this area on horseback, armed with rifles, near streams. Ask: What do you think these pictures seem to show about life in this area in the early days of the town? Quote Kelly to the effect that the land was easy to get but that "The stream frequently became more important than the house or the land." Ask: Why?

39. Write on the board the sign which was displayed in 1870 indicating that land would be sold in Phoenix. Then read aloud the brief statement found in Corle about the judge who bought lots. Ask: Why would people then think him foolish to buy these lots? Tell pupils what land in the area is worth today.

Corle, The Gila, p. 326.

40. Have pupils read eye-witness accounts of Phoenix in the 1870's. Ask: Why do you think the writer in the Territorial Expositor sounded so unsure of some of the early events? Why was he so unsure of the population of the town in which he lived? How rosy a picture did he present of Phoenix's future? Might he have any reason for presenting an overly favorable or an unfavorable picture? Why?

Have pupils check the accounts once again to find out how Phoenix proper was when it was first laid out? (Compare the 320 acres to some area within the children's own town.)

G. Types of agriculture in a region depend upon man's cultural values, perceptions, and level of technology as well as upon climate, soils, and topography.

S. Applies previously-learned concepts and generalizations to new data.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, etc.

G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

G. A town or city may serve as a central point to which produce comes from a hinterland and for distribution to other places and to which supplies come from other places for distribution to the hinterland. The central place gathers, stores, and ships goods.

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1. The products grown on irrigated lands became more varied.

2. Cattle owners in Texas too, cattle drives into the valley to feed on irrigated acres; they sold beef to army camps.

3. Businesses developed to provide services for the farmers and then for the other settlers in the town.

4. The townspeople collected products from the hinterland, including agricultural products and minerals, and shipped them to the army camp and to other points by use of freighting outfits. They brought in supplies for the miners, the farmers, and the townspeople.

Ask: What does the writer in the Phoenix paper tell us about kinds of farming being carried on in the irrigated areas? How did farming by these early white settlers compare with that of the Hohokum Indians? What problems did the early farmers face despite the irrigation?

Also discuss: Why do you think Texas cattle owners began cattle drives into the Phoenix area each year? Where could they sell their cattle, since there was no railroad into Phoenix as yet? Why do you think they drove the cattle to Phoenix rather than directly to Camp Mc Dowell and other army camps?

Ask: Why do you think the different businesses described in the Expositor were set up in the town? Perhaps choose different pupils to role-play a discussion among early Phoenix businessmen. Assign a different business to each pupil. These "businessmen" should discuss why they set up their businesses. Afterwards, hold a general class discussion: Did their reasons have anything in common? If so, what?

41. Ask: Why would people in this valley collect products in a central place such as Phoenix rather than selling their agricultural products directly to the army camp itself? Why would they buy goods from traders in Phoenix rather than importing goods from other parts of the country themselves? How would these trading functions affect the size of Phoenix?

G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

G. Cities are likely to grow if they perform functions which are needed by the surrounding community or for a larger functional region.

G. Man uses his physical environment in terms of his cultural values, perceptions and level of technology.

G. When people migrate from one place to another, they take their culture with them.

G. When people are in direct contact with one another, they tend to borrow cultural traits.

S. Applies previously-learned concepts and generalizations to new data.

G. A place needs cheap and rapid transportation in order to carry on much trade with other places.

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5. New settlers, particularly Mormons, expanded irrigation in the valley and introduced new irrigation techniques.

C. Transportation and communication developments led to the growth of Phoenix.

1. A railroad had been built as far as Cosa Grande by 1879, and when building came to a stop for a time, the unemployed workers moved into Phoenix.

2. By 1887, a railroad reached Phoenix. This facilitated the movement of goods to other places and the purchase of goods from other places.

42. Tell the class about the Mormon immigrants into the Phoenix area and the place from which many came in Utah. Ask: What advantage might they have over some other settlers from the east? Why would this immigration from Salt Lake City help the non-Mormons in the Phoenix area?

43. Tell pupils about the first street railway drawn by mules. Ask: What does the introduction of this street railway indicate about the town?

Also tell the class about the completion of a Southern Pacific railroad line to Phoenix in 1887. Discuss: What effects would you expect?

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Wylls, Arizona, The History of
a Frontier State, p. 236.

G. Machinery and power make possible greater production per person.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. Climate may set up limitations upon man's activities, given a specific level of technology, but man has learned to overcome many of the earlier limitations.

G. Irrigation makes it possible to grow crops on land which otherwise would be too dry.

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V. By 1940 Phoenix had developed into a fairly good-sized city as the result of the building of a number of dams, beginning with the Roosevelt Dam on the Salt River in 1910.

   A. The population in 1940 was 65,414 within the city limits and 120,000 in Greater Phoenix.

   B. This growth was made possible largely by the development of a series of dams and the completion of a new railroad into the city.

44. Have the pupil who made the timeline add dates for construction of a flour mill (1869), the laying out of the townstie (1870), the completion of a telegraph line to the town (1872), the completion of an electric plant in which steam engines were run by burning cordwood (1886), and the introduction of the steam railway and railroad (1887). Discuss the effects of each.

45. Tell pupils that they are now going to look at Phoenix in 1940. What changes would they expect? What population total might they expect?

"Selected Readings on Phoenix."

Have pupils read brief accounts of Phoenix in 1940. Discuss: How did the Phoenix of 1940 compare with that of 1887? How good were the class; predictions? (Compare population to that of some nearby town or city.) What might have accounted for such growth? (Set up hypotheses to test.)

46. Ask the class what a dam is. Perhaps discuss beaver dams which they have seen, or show pictures of them to develop a general idea of damming up a river. You may wish to have pupils build a dam on a river in a sand bos.or with clay in a large pan. Then show pupils pictures of a variety of sizes of dams in rivers. Discuss: Why might people wish to build dams?

S. Draws inferences from maps.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Governments provide many services which people cannot provide for themselves.

G. Power for industry is obtained from a number of sources, including water power or steam and electricity produced by burning coal.

G. Factories must have some form of power to run machinery.

G. A town or city may serve as a central point to which produce comes from a hinterland for distribution to other places and to which supplies come from other places for distribution to the hinterland. The central place gathers, stores, and ships goods.

G. Cities are likely to grow up if they perform funcgions which are needed by the surrounding community or for a larger functional region.

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1. Phoenix had suffered from periods of drought when the rivers did not supply enough water, and floods which swept out the simple dams used for irrigation purposes. This led to cooperation with the federal government for the building of a series of dams on the Salt River to store water and prevent floods.

2. Phoenix became the center for marketing and processing for the rapidly-developing agricultural hinterland.

47. Ask: If you had wanted to dam the Salt River, where would you have put the dam? Let pupils examine a relief map to try to decide. They should discuss the importance of relief in building dams. Now show the class some photos of some of the dams on the river.

48. Project a map showing dams on the Salt, Gila, and Verde Rivers. Why might people put up so many dams on the Salt River above Phoenix? Let pupils suggest reasons and then read to find the answer. Discuss. Also discuss the role of the federal government in dam building. Why wasn't the job of building these dams left to private groups? Also discuss: How migh these dams be used today for other purposes than flood control and irrigation?

49. Have pupils read descriptions of the growth of the Phoenix hinterland and of Phoenix as a marketing and processing center for the hinterland.

dam the Salt River, where Let pupils examine a re- They should discuss the im- ing dams. Now show the class dams on the river.	See Cross, et.al., Arizona, Its People and Resources, pp. 117, 119; Arizona Highways, Sep't. 1966, cover and pp. 20-21, 25. (Slides also available.)
on the Salt, Gila, and Verde ut up so many dams on the Let pupils suggest reason nswer. Discuss. Also dis- government in dam building. ng these dams lef to private migh these dams be used to flood control and irrigation?	For a map, see p. 120 of Cross, et.al., Arizona, Its People and Resources. "Selected Readings on Phoenix."
s of the growth of the Phoe- x as a marketing and process- d.	"Selected Readings on Phoenix."

G. Irrigation makes it possible to grow crops on land which otherwise would be too dry. a

G. Improved transportation facilities make possible bigger and wider markets as well as better and less costly access to resources.

G. Differing crops need differing amounts of moisture and differing temperatures and numbers of frost-free days in order to grow.

S. Makes and interprets time-lines.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology. b

G. Types of agriculture in a region depend upon man's cultural values, perceptions, and technology as well as upon climate, soils, and topography. c

G. Diversification of production makes a company or a region less dependent upon price fluctuations for one product or upon the supply of specific resources.

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a. The new certainty of water for irrigation made possible a great expansion of agriculture in the region, and the railroads made it possible to ship agricultural products to distant markets and to get more supplies in return. (A second railroad was completed into Phoenix in 1926.)

b. The white settlers had learned to pump out waterlogged fields, to overcome much of the problem of alkalization, and to rotate alfalfa with other crops to restore the soil.

c. Agriculture had become more diversified, with growing markets in other parts of the country. The soil and temperature made possible a number of kinds of crops, once farmers could be sure of water. Furthermore, extended markets and transportation facilities and consumer demand brought profits from greater diversification.

50. Discuss: Imagine that you were a farmer in the first part of the 20th centure. Why might you have wanted to move to the Phoenix area? What advantages did it have for farming? (Be sure to bring out in the discussion the importance of irrigation, temperatures, and the completion of a second railroad line.)

51. Have the pupil in charge of the timeline add the dates for the completion of the dams and of the second railroad line.

52. Ask: Why were the farmers able to continue irrigation in this area in which the Indians had found that continued irrigation led to waterlogging and alkalization? What did the farmers do to replenish the fertility of the soil? Perhaps play a tape by a high school science teacher who should explain techniques for preventing water logging and alkalization.)

53. Ask: Had farming in the Phoenix area become more or less diversified than in 1887? (Be sure to have the class define this term.) How can you explain the change? Was it due to basic changes in weather? to greater irrigation? or to other factors? What advantages might such diversification have?

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. Specialization of individuals and regions make for interdependence.

G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

S. Sets up hypotheses.

S. Draws inferences from tables.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

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d. Phoenix developed a number of processing industries as well as commercial functions.

C. Pheonix also became an important vacationland.

VI. We look at Phoenix today.

A. Phoenix has mushroomed into a large city with a huge surrounding metropolitan area. By 1964 the population was 514,000 and the city covered 222 square miles as compared to the 1950 population of 107,000 and area of 10 square miles or the 1958 population of under 257,000 and area of 52.6 square miles or the 1940 population of 65,414.

54. Ask: Why do you think Phoenix developed certain kinds of businesses and manufacturing plants rather than others? Have pupils analyze the role of the city as a center city, its relationships with the state, the region, and the nation. Discuss: Was Phoenix more or less dependent upon other parts of the country in 1940 than in 1887? Why?

55. Read aloud several paragraphs on tourists and recreation from"Panorama: Phoenix, Arizon." Why might so many people wish to go to Phoenix for vacations?

56. Project a table showing the number of building permits issued in Phoenix from 1945 on. What does this table show about the growth of Phoenix?

Project a table comparing the population of different Arizona cities. How does Phoenix rank in comparison with the others? Now have pupils look up the population of Pheonix in 1940, 1950, 1958, and 1964. Discuss: How much has the population grown since 1940?

57. Have pupils check their almanacs to find out the number of square miles covered by the city of Phoenix in 1950, 1958, and 1964. One pupil might prepare a graph to show this growth. Ask: What do you think might explain this tremendous growth?

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e number of building permits 5 on. What does this table hoenix?	Cross, et.al., Arizona, Its People and Resources, p. 371.
the population of different Phoenix rank in comparison pupils look up the popula- 950, 1958, and 1964. Discuss: n grown since 1940?	About Arizona, p. 29.
manacs to find out the number the city of Phoenix in 1950, might prepare a graph to show you think might explain this	"Student Almanac."

G. A number of factors -- climate, surface features, natural resources, accessibility, and history -- affect settlement and growth patterns.

G. The significance of location depends upon cultural developments both within and outside a country or region.

S. Sets up hypotheses.

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B. The climate has attracted both tourists and permanent residents; however, the climate has not changed. Other factors were needed to give an impetus to the movement to Phoenix.

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1. The greatly increased productivity of American workers brought higher living levels and more income for retirement and travel. This made it possible for many to visit Phoenix or retire to Phoenix to take advantage of the climate which they liked.

Have pupils compare the area covered by Phoenix with the area covered by New York City and the population of Phoenix with the population of New York City. Ask: From the figures above, what can you predict about how Phoenix differs from New York City?

58. Have a pupil prepare a map and a table showing where Arizonians came from as reported in the 1960 census. After pupils have studied them, ask: Which states provided the largest number of people moving into Arizona? How many people from the children's own state had moved to Arizona? (Compare this figure with the population of some town or city in the pupils state.) What does this map indicate about the movement of people into the state? Now ask pupils to set up hypotheses to explain this movement.

59. Post some of the advertising folders put out by the Valley of the Sun Visitors Bureau of Phoenix. What do the folders emphasize in order to attract visitors? Try to get pupils to hypothesize that the climate has led to the great population increase. Then ask: Has the climate changed since 1939? Why are people attracted in larger numbers by the climate today than in 1939?

60. Show pictures of some of the recreation areas and motels, etc. to illustrate the degree to which Phoenix has become a vacation land. Also show pictures of older people who have retired to Arizona. Ask children if they

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e.g. Arizona Highways, March, 1964. See the Nov., 1967 issue on Sun City, the retirement suburb.

G. A number of factors -- climate, surface features, natural resources, accessibility, and history -- affect settlement and growth patterns.

G. Business enterprises (or states) compete with each other by heavy advertising to make their products better known or to increase the demand for their product rather than for competing goods.

G. Improved transportation facilities make possible wider and bigger markets as well as better and less costly access to resources.

G The significance of location depends upon cultural developments both within and outside of an area.

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2. The growth of mass media and advertising made possible national advertising campaigns to attract visitors and settlers.

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3. The sharp rise in automobile ownership, the development of better highways, improved rail transportation, and the rapid expansion of airlines, including high speed jet travel have made it possible for many more to vacation in the Phoenix are and have made it easier for Phoenix to sell its products in a wider market.

know of any people who have retired there. (They might also ask parents this question.) Now ask: What would be needed in this country to make it possible for people to retire in Arizona or to take many vacations to Arizona? (Among other things, try to bring out need for high levels of living. Use a graph or chart to illustrate changes which took place in living levels after World War II.)

61. Prepare an exhibit of advertising material of all types from Phoenix and Arizona. Post travel posters, booklets, etc. Then have some pupils investigate at a local printing shop the cost of producing in quantity one of the brochures or posters. Why would Arizonians spend so much money on adversiting? (Why do any people advertise?) What effect might national campaigns have upon the number of visitors and people who would move to Arizona? (Have a pupil also find out how his own state advertises. He should compare some of its literature with that put out by Arizon and Phoenix.)

    Now project a table showing estimated tourist expenditures in Arizona. Ask: Does this table provide any data to support your hypotheses about why Arizona might advertise? Why or why not?

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62. Show a photo of a 1929 car on a mountain road in Arizona. Then show a car on the road there today. Ask: How do the modern road and car compare with those of 1929? What effect would the improvement have upon Arizona and Phoenix?

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retired there. (They might
ion.) Now ask: What would be
ake it possible for people to
e many vacations to Arizona?
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or chart to illustrate changes
levels after World War II.)

tising material of all types
Post travel posters, booklets,
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would Arizonians spend so much
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would move to Arizona? (Have
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es this table provide any
eses about why Arizona might

Cross, et.al., Arizona, Its People and Resources, p. 376.

on a mountain road in Arizona.
there today. Ask: How do
pare with those of 1929? What
have upon Arizona and Phoe-

1929 photo in Simpech, p. 26. See Arizona Highways for modern photo.

S. Uses map scale.

G. The significance of location depends upon cultural developments both within and outside of an area.

G. Climate may set up limitations upon man's activities given a specific level of technology, but man has learned to overcome many of the earlier limitations.

4. Phoenix
ditioni
to live

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Some things can be produced or activities carried on better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

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G. The growth of factories or other businesses in a town attract people, stores, etc., which in turn make the area more attractive to new factories and businesses and also stimulate the growth of old ones.

4. Phoenix led in the development of air-conditioning which makes it much more pleasant to live in Phoenix during the hot summers.

5. World War II saw the building of several military bases and air fields (partly because of good weather); the bases nade Phoenix a good area in which to develop small industries producing goods for the airforce. They also mean that many soldiers became acquainted with the Phoenix area and liked it.

63. Have pupils use highway map to figure the distance from their home city to Phoenix by car. Estimate the time needed to travel this distance by car. Compare with the time needed to travely by railroad and by plane. Perhaps have a pupil make a chart to compare time-distances. Discuss effects of air travel upon the growth of Phoenix.

64. Quote oldtimers in Phoenix about how they kept cool before air conditioning. Then have a pupil give a report on the development of air conditioning in Phoenix. Discuss: Why would such a development be important to Phoenix?

Arizo
p. 1

65. Ask: Why might the government set up air bases near Phoenix during World War II? What effect might such bases have upon Phoenix? Quote several authors.

Arizo
1964,

to figure the distance from
by car. Estimate the time
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Arizona Highways, March, 1964, p. 16. Time, Feb. 15, 1960.

nt set up air bases near
What effect might such
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Arizona Highways, March, 1964, 11-13.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. The significance of location depends upon cultural developments both within and outside of an area,

G. A change in situation brings about a corresponding change in the use of a site.

S. Makes and interprets timelines.

S. Applies previously-learned concepts and generalizations to new data.

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6. The development of certain industries in Los Angeles and Texas provided a nearby market for certain types of manufactured products such as electronic products.

The tourist trade has become even more important to Phoenix.

66. Read aloud several statements by manufacturers or about business development in Phoenix which shows the importance of climate and of location between Los Angeles and Texas. Discuss: How did changes in these two places affect the importance of the location of Phoenix?

    Arizona Highways, March, 1964, pp. 11-13.

67. Have the pupil in charge of the timeline add events and factors which have led to the great expansion of Phoenix since 1940.

68. Have a pupil report on an investigation he has made by writing to the Phoenix Chamber of Commerce for material about Phoenix and the amount of income brought into Phoenix each year by visitors.

69. Tell pupils that as of 1964 Phoenix motels and hotels, etc. could house 35,000 tourists on any one day. Compare this number with the population of some town or city with which pupils are familiar.

    Tell pupils that the Phoenix metropolitan area had 250 conventions of out-of-town business conferences in 1964. Compare this with the number of such conventions in the closest metropolitan area. Ask: How would this influx of tourists and conventions affect Phoenix?

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Business enterprises (or governments) may compete with each other by trying to improive the quality of their product.

S. Applies previously-learned concepts and generalizations to new data.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

S. Sets up hypotheses.

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D. Manufacturing was unimportant until recently, but a number of industries have been developed to take advantage of the nearby markets in California and Texas and of the climate which attracted workers or which was important for some industrial processes. The industry is light industry, engaged in manufacturing light-weight objects; transportation costs to centers of population would be prohibitive for heavy industry. Manufacturing employment doubled from 1954 to 1958 and has continued to increase rapidly.

E. Agricultural production in the hinterland has continued to expand, although the number of acres devoted to such production has declined as land is used for housing developments.

70. Read aloud a description of how a deoderizing spray is spread over stockyards in Phoenix by plane to reduce the smell in the city. Ask: Why do you think people would go to such an expense?

71. Project a table showing changes in manufacturing employment from 1948 to 1958. Which state grew the most? Give pupils some indications of changes in types of industry. Ask: Why doesn't Phoenix produce steel or autos or heavy machinery?

72. Project a table showing the growth in agricultural income by different states. How does Arizona compare with other states in terms of actual income? in terms of the growth of agricultural income?

Now write figgures on the chalkboard to show changes in the number of irrigated acres devoted to agriculture in Arizona. (From 1.3 million down to 1 million in 1960). How can pupils account for the growth of agricultural income?

Project a table showing comparative yields per acre for Arizona and the average for the U.S. How does Arizona compare with the U.S. average? How can pupils try to

of how a deoderizing spray is n Phoenix by plane to reduce the Why do you think people would	Arizona Highways, March, 1964, p. 3.
changes in manufacturing employ- Which state grew the most? Give of changes in types of industry. produce steel or autos or	Cross, et.al., Arizona, Its People and Resources, p. 374. See background paper and Newsweek, Jan. 4, 1960, p. 48. Arizona Highways, Mch., 1964, pp. 33-34.
he growth in agricultural in- How does Arizona compare with actual income? in terms of the come?	Cross, et.al., Arizona, Its People and Resources, p. 371.
chalkboard to show changes in cres devoted to agriculture in on down to 1 million in 1960). r the growth of agricultural in-	
omparative yields per acre for or the U.S. How does Arizona rage? How can pupils try to	About Arizona, p. 32.

S. Test hypotheses against data.

S. Compares areas.

G. The growth of factories and other businesses in a town attrace people, stores, etc., which in turn make the area more attractive to new factories and businesses and also stimulate the growth of old ones.

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F. Like other large cities, Phoenix has seen the growth of a larger metropolitan area which covers much of the county and valley.

1. Metropolitan Phoenix covers an area of about 9,226 square miles (roughly the size of the state of Vermont).
2. The area includes 40 cities, towns and villages strung close together in the county.

G. Service occupations have had to grow to take care of the increased population.

explain this difference? Let pupils set up hypotheses to test later.

73. Project a table showing the distribution of farm acreage by counties in Arizona. Which agricultural products are most important in Maricopa County in which Phoenix is located? Why might farmers grow so much alfalfa? (Let pupils review the reason.)

74. Now have a pupil report on reasons for the great farm productivity and current agricultural developments in the Phoenix area. Have pupils check hypotheses.

75. Project a map overlay showing a map of Maricopa County over a map of the state of Vermont or over some comparable area in the pupils' own state. Tell the class that the area includes some 40 cities, towns, and villages. Compare to a metropolitan area in the pupils' own state, and discuss way in which cities and suburbs and towns merge into each other or are separated only by a few miles of open places. (Draw upon own experiences in local area or show slides of some metropolitan area in the pupils state. Aerial photos would be most useful to illustrate a metropolitan area.)

76. Ask: What would be needed in the Phoenix area to take care of this great increase in population? (Have pupils list some of the kinds of businesses and occupations which would be needed.)

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About Arizona, p. 32.

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Arizona Highways, Mch., 1964, pp. 29-30.

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G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

S. Evaluates source of information in terms of bias.

G. People in most societies depend on people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. Specialization of individuals and regions makes for interdependence.

G. A town or city may serve as a central point to which produce comes from a hinterland for distribution to other places and to which supplies come from other places for distribution to the hinterland. The central place gathers, stores, and ships goods. It may also process goods and provide services for the region which it serves.

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H. As a result of the growth of many kinds of economic activity, Arizona as a whole has had a great increase in income.

I. Phoenix has increasingly complex relationships with the rest of the state, with the region, with other parts of the country, and with other countries.

1. Phoenix performs many and varied central place functions at different levels of specialization for the nation, the state of Arizona, and for the region of the Southwest.
    a. Phoenix performs only limited central place functions for the entire nation (e.g. tourism and business conventions).

77. Project a table showing income growth for a number of different states. Where does Arizon rank among these states in terms of actual income? in terms of the increase in income? Does this prove that income is growing faster in Arizona than in other states? Who prepared the book in which this table is found? Might the people responsible for the book have any reason for leaving out other states which might have exceeded Arizon's growth? Now show pupils other figures and let them check on Arizona's place in income growth.

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78. Review with pupils the extent of relations of Phoenix with the state of Arizona, the Inter-mountain region, the U.S. as a whole, and other countries in earlier periods. Ask: Wouldyou expect Phoenix to have more or fewer relationships at present? Why?

79. Use an opaque projector to make a large outline map of the U.S., the states, the regions delineated in the overview of the U.S., and the cities of states including Phoenix. Place this map on a table or on the floor and make the three dimensional map as suggested in the backgroup paper accompanying this unit. (e.g. Use poker chips of various heights to show differences in population of each central place city on the map.) Ask pupils to try to

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the map.) Ask pupils to try to

e.g. Cross, et.al., *Arizona, Its People and Resources*, p. 370.

G. People in most societies depend on people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. A town or city may serve as a central point to which produce comes from a hinterland for distribution to other places and to which supplies come from other places for distribution to the hinterland. The central place gathers, stores, and ships goods. It may also process goods and provide services for the region which it serves.

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b. Phoenix is the dominant central place in the region of the Southwest, and its central place functions are more specialized than those of other central places in the Southwest (e.g. processing and wholesale distribution and some specialized service functions.)

rank these cities according to certain size categories. Where does Phoenix rank as compared with other cities studied thus far? As compared with other cities in the region of the Southwest? Where are the largest cities found? What kinds of services or functions does Pheonix provide for the entire nation?

80. Have a committee investigate the kinds of products brought to their own state from Arizona and Phoenix. For example, they might find out if any of the lettuce or fruit in stores comes from there. They might also survey parents in the school district and find out how many have visited Phoenix at some point.

81. Now focus upon Phoenix. Perhaps make an enlarged map of the Southwest and make another three-dimensional map which will show more of the cities and towns. Where are the medium size cities which are smaller than Phoenix? Have pupils also locate some of the smaller towns close to Phoenix. Then ask: What kinds of functions would you expect some of the smaller places to provide for the areas surrounding them? Have pupils list kinds of services and functions possible and try to figure out which would most logically be done by small places, which by large places, and which only by the largest city. They should set up hypotheses and cite their reasons.

Project a table showing retail trade in Arizona by county. Which county seems to be the center for retail trade in terms of all of the criteria? What would this mean about kinds of businesses which would be found in cities and towns in this county? Then show the class a homemade chart illustrating the actual types of place functions performed by Phoenix, by middle-sized cities of the region, and by smaller towns.

Cross, et. al., Arizona, Its People and Resources, p. 240.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. Specialization of individuals and regions makes for interdependence.

G. Man changes the character of the earth.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

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2. As the population of Phoenix has grown, it has become more dependent upon other parts of the nation and world for materials and supplies of various types and for markets.

J. Phoenix may face a serious water problem in the future because the water table is being lowered by pumping and because the dams eventually silt up. It is more expensive to remove the silt than to build new dams.

82. Point out that pupils have been talking about services performed by Phoenix for the nation, region, and state. Now ask: Why would Phoenix be dependent upon other parts of the state, region, nation, and world? Ask pupils to try to list ways. (Stimulate their suggestions by further questioning if necessary.) Then cite some figures to illustrate the growing interdependence.

83. Have a pupil give a report on water problems facing Phoenix. He should include a discussion of the lowering of the water table and of the problem of silting up of dams.

84. Pupils might look briefly at the W.P.A. guide to Arizona and then write a modern guide, including historical sketches for Phoenix.

85. Have a pupil prepare a vertical bar graph to place under the timeline which has been prepared. This graph should compare the population of Phoenix at the different time periods studied. Have the class examine the timeline and graph and summarize the reasons for the changes in the valley.

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e.g. Newsweek, Jan. 4, 1960, pp. 45-46.
Cross, et. al., Arizona, Its People and Resources, pp. 104-106, 110-111.
For teacher's use, see "Phoenix: Drought Underground," Saturday Review of Literature, Oct. 23, 1965, pp. 44, 76.

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G. Winds which have been warmed and have picked up missture crossing large bodies of warm water tend to cool as they rise over mountains and so drop their water on the side of the mountain from which they come.

G. As winds descend into vallyes from mountain ridges, they are warmed and tend to pick up moisture.

VII. The Intermountain Region is vary arid, with some deserts which are not used at all. Large parts of the region are irrigated or used for dry farming (in the north) and for grazing. The region has a number of mines and a few large cities which have developed both to serve the agricultural or mining hinterland and because people are attracted by the climate.

86. Have pupils examine a political-physical map, a rainfall or precipitation map, a temperature map, a population map, a map of land-use or agricultural types, and a map of mineral resources. Ask: What similarities do you note between the other parts of this Intermountain Region and the Phoenix area? What differences do you notice? How can you explain these patterns of distribution?

87. Perhaps divide the class into groups to study cities such as Spokane and Wenatchee in Washington, Bend in Oregon, Twin Falls and Boise in Idaho, Tucson, and Bisbeen in Arizona, Salt Lake City and Bingham Canyon in Utah, Carson City and Reno in Nevada, and Albuquerque in New Mexico. Have each group try to find out why people settled in the area and what factors contributed to the growth of the city. They would also compare their city with Phoenix.

88. Discuss: Why might this intermountain area be set off as a sub-region of the West? What criteria are used in making this distinction between it and the other parts of the West? Pupils should fill in the column after the Intermountain Region in the Regional Chart which they began during the unit on the Midwest.

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"Arizona: Thriving Oasis," Time, February 15, 1960. (Includes colored photos. Out of date but useful to show change.)

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Roose, Robert de. and Robert F. Sisson, "Arizona: Booming Youngster of the West," National Geographic, March, 1963.

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III. Leaflets and Booklets

"About Arizona..." Valley National Bank, P. O. Box 71, Phoenix, Arizona, 85001.

Arizona Road Map. Arizona Highway Department, Phoenix, Arizona. Can also obtain free from Arizona Development Board, 1500 West Jefferson, Phoenix. (Includes inset map of Phoenix.)

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BACKGROUND PAPER ON PHOENIX

I. EARLY INDIAN CIVILIZATION, IRRIGATION AGRICULTURE, AND METROPOLITIZATION IN THE GILA WATERSHED. (Pre-white settlement period, circa. 1300).

It is not known when man first arrived in the Phoenix area, but historians claim that the Gila and Salt river valleys, which today compose the hinterland of Phoenix, were the scene of the most advanced of all pre-Columbian cultures.[1] The Hohokam people lived in these valleys. Archaeologists estimate that there were around 250 cities and towns in the Gila watershed by 1100 A. D.

It is well to remember that the white man did not invent city living. The Hohokams expanded "in all directions from a 'metropolitan' area"[2] close to where the Salt and Gila rivers meet.

These Hohokam Indians achieved a high level of civilization in what is now the hinterland of Phoenix. They were skilled in masonry, irrigation, agriculture, astronomy, and architecture.

In the era of the occupation of the land by the white man, irrigation agriculture did not become a significant factor in the economy of Phoenix and its hinterland until the 1930's. However,

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the Hohokams developed extensive irrigation canals. They grew cotton as well as foods such as corn, beans, pumpkins and squash. Irrigation agriculture was the foundation of their food supply, economy, and metropolitization. The 125 miles of canals which they built and maintained indicate that they mastered most of the engineering problems associated with irrigation. However, they could not cope with water logging or with the chemical problems that often accompany irrigation agriculture.

Chemical problems were particularly acute in the Gila watershed because of the high saline content of the Gila and Salt rivers. Finally, so much salt was deposited in the soil that the land could no longer be used to grow crops. Parts of the land also became water-logged.

The Hohokams had no pumps to drain their water logged lands and no way to combat the accumulation of salts and so the deterioration of their once fertile crop lands. The lands which they had redeemed from waste land and made fertile through irrigation could no longer yield a harvest capable of feeding the Hohokam people. The threat of famine forced the Hohokams to abandon their fields in the Gila watershed.

With the destruction of the fields in the hinterland, the Hohokam cities disappeared because unlike cities of today,

> these cities had to depend entirely upon their local hinterland for their food supply.[3]

II. THE WHITE PIONEER SETTLEMENT PROCESS, THE PIONEER ERA, AND THE DEVELOPMENT OF THE RESOURCE BASE OF THE HINTERLAND AS AN IMPETUS TO THE EARLY GROWTH AND DEVELOPMENT OF PHOENIX. (Circa 1860 to 1910)

Pima and Maricopa Indians inhabited the Phoenix area when the white man arrived. Since they were a peaceful people, the traditional Indian warfare associated with the white settlement of Indian lands was not a major problem for the white settler.[4]

In 1864 John Smith set up a hay camp in the area of present-day Phoenix. He set up a tent-house and sold hay, under contract, to Camp McDowell, some 30 miles away.

The origin of Phoenix as a hay camp illustrates the important relationship between a central point and its hinterland and the two-way movement of freight through a central place. The origin of Phoenix, therefore is explained by: (1) the resource base of the hinterland which produced hay crop, (2) the existence of a demand for the hay crop, and (3) the need for a central place to which the hay crop of the hinterland fields could be shipped and

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In this period of white settlement, the growth and development of Phoenix depended upon the resource base of its hinterland, the existence of a demand for the products that could be produced from its resource base, and the willingness of pioneer settlers to migrate to the hinterland and work the land. The rich and varied resource base of the hinterland attracted pioneer settlers who came to mine and farm.

Many of the pioneers who came to the hinterland came in the hope of finding metals. These pioneer prospectors reaped a good harvest of metals from Arizona's mines. Deposits of copper in the hinterland of early Phoenix were mined extensively during the year when the use of electricity expanded rapidly. Arizona's annual production of copper grew from 800,000 pounds in 1874 to 831,000,000 pounds in 1929.[5]

In summary, the growth of mining activities in the Phoenix hinterland resulted from a rich metal base, technological changes taking place in the American economy which fed a heavy demand for these metals, and adventuresome pioneer prospectors who came to work the mines.

With the growth of mining activities in the hinterland, Phoenix became the central place for supplying the miners in the entire North-Central Arizona Territory.

Many of the pioneers who came to the hinterland of early Phoenix came to farm the land. With low annual precipitation in the area, irrigation was imperative to the survival of farming on a large scale.

The white pioneer settler was generally capable of meeting the challenge of irrigation agriculture. One such pioneer was Jack Swilling. Having stopped for a few days at the way camp he noticed the lay of the land and the water supply from the Salt River which was easily accessible by utilizing the ancient Hohokam canals. Swilling was able to interest others in the potentials of irrigation agriculture. He collected enough capital to restore many of the ancient Hohokam canals to bring water to the land. Within a year, crops were harvested and several ranches established.[6]

The Mormons were the first "modern" irrigators in the Arizona hinterland of early Phoenix. They reconstructed and enlarged many of the ancient Hohokam canals after taking possession of the land in the nineteenth century. Nevertheless, irrigation agriculture did not expand greatly until the building of the Roosevelt Dam in 1910.

Some of the pioneers who came to the hinterland of early Phoenix came to graze cattle and sheep. Some of the meat was used for food in the local area. Hides and tallow from the slaughtered animals could be sold outside of the region, unlike more perishable meat.

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After the Civil War, Americans began to drift great herds into the Phoenix hinterland, mostly from Texas. These pioneers found good markets for their livestock at military posts and mining camps throughout the hinterland. After the railroads came, cattle could be shipped to other regions in the country.

The pioneer sheep industry of the Phoenix hinterland was also dependent on the range. The sheep of non-Indian owners have always been run in large units, and the small sheep rancher was never important in the sheep raising activities in the hinterland of Phoenix.

The tributary area of early Phoenix was of tremendous importance in the growth and development of Pheonix. The central place functions performed in Phoenix in the pioneer period were a reflection of the mining, farming, and grazing activities of its hinterland.

In this pioneer period, freighting outfits brought lumber and other goods to Phoenix and took farm products to other places. The composition of this early freight movement into and out of Phoenix illustrates a principal function of a central place -- that of acting as a clearing house to gather the surplus products of the hinterland and to ship these products to other regions where these products are in short supply.

From this outward movement of the surplus products of the hinterland through Phoenix to other regions where flour, grain, and other farm products were needed, Phoenix earned for its hinterland inhabitants the purchasing power needed to obtain lumber and manufactures needed from other regions.

Phoenix also became the central place for its hinterland in the receipt of goods from other regions, and the distribution center from which these goods were distributed to the hinterland.

By about 1910, irrigation agriculture had been ushered in on a more massive scale, the smaller pioneer farms had increased in both size and specialization, livestock grazing had consolidated and specialized, and mining, which was once the province of the rugged individual prospector now became the province of huge integrated corporate enterprises. The central place functions performed for the hinterland in Phoenix reflected changes in the activities of the hinterland. Phoenix had reached a critical threshold in its growth and development process.

III. THE GROWTH OF PHOENIX ACCELERATES WITH THE ACCELERATED DEVELOPMENT OF THE RESOURCE BASE OF ITS HINTERLAND (circa 1910 - 1945)

The low annual level of precipitation confines dry farming to the higher elevations of the Phoenix hinterland where some crops, principally beans and potatoes, will thrive. By and large, agriculture in the Phoenix hinterland is irrigation agriculture.

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Some of the more important reclamation projects that brought irrigation agriculture on a massive scale were the Roosevelt Dam in 1910, the Yuma Reclamation Project completed in 1912, the Coolidge Dam dedicated in 1929, and the Bartlett Dam completed in 1939.

When water is added to the rich soil of the Phoenix hinterland under the Arizona sun, the results are astonishing. Irrigation makes possible excellent yields of cotton, alfalfa, certain grains, vegetables, and of citrus frutis.

The irrigated lands rarely see crop failures. Because of the temperatures of the irrigation water, and the soils, the Salt River Valley land ranks among the topareas of the nation in per capita yield per acre.[7]

With irrigation, crops that had been grown only for a locally restricted market area were soon moving by rail to markets outside the Phoenix hinterland. New crops were also introduced.

The chief crop in the area is alfalfa. Alfalfa needs some water which can be obtained from irrigation. Given this water and the temperatures of the area, the farmer in the Phoenix hinterland can produce from 5 to 8 crops of alfalfa a year. Alfalfa is a good crop for the Phoenix hinterland because its "roots go to incredible depths, open and aerate the soil, and prepare it for perfect moisture penetration."[8] Farmers frequently plant alfalfa for several years. Then they plant cotton, vegetables, and other crops which deplete the soil before returning to alfalfa again. The Phoenix area ships bailed alfalfa hay as far as New York State. However, most of the bailed alfalfa is sold in the Midwest or in the Pacific states.

Next in importance to alfalfa as a forage crop in the hinterland of Phoenix is the sorghum group.

By 1940, the main cash crop in the Phoenix hinterland was cotton. Although cotton was grown earlier, it did not become important until the rise in cotton prices during World War I. These prices rose so high that farmers in the Phoenix area sold most of the dairy cows and increased their production of cotton. Although some dairy farming has returned to the area, it has never regained its pre-World War I level.[9]

Irrigation also makes possible excellent crops of cantaloupes and lettuce. Farmers also began to plant other vegetables such as carrots and beets.

The Phoenix hinterland is also famed for its citrus fruits and dates. The climatic resource of the hinterland approaches the ideal for both grapefruit and organges. Furthermore, the area is not plagued by many of the insects and scales which plague citrus fruits in other areas. The lack of such insects reduces costs of growing the fruit.[10]

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The fertile irrigated farm districts of the Phoenix hinterland: the Gila Valley, the Salt River Valley, the Casa Grande Valley, and the Uma Valley are "man-made cases," and these cases appear as dense areas of concentrations on almost any map of the Phoenix hinterland whether it be a map of rural population, harvested acreage, or income from agricultural production.

Irrigation agriculture is immensely important in the Phoenix hinterland--particularly in the immediate vicinity in the valleys of the Salt and Gila. However, irrigation made it possible to grow crops in less than one per-cent of Arizona's land area by 1938. Much of the rest, however, could be used for grazing. The climate in general is so mild that cattle owners do not have to winter feed; the practice is to graze livestock on the range throughout the year. Cost of production is therefore lower than in sections where it is usually necessary to supplement free grazing with harvested feeds.[11]

Like agriculture which underwent tremendous technological changes from irrigation and underwent equally significant organization changes such as increased size, specialization, commercialization, and orientation to an ever expanding inter-regional market, livestock grazing also underwent significant changes. The pioneer livestock grazing period in Arizona was characterized by open ranges and roaming herds. By the middle of the 1890's the existing range land could support no more cattle. To expand the range land required the sinking of wells and building of water tanks. Arizona became a state in 1912. Soon most of its land was leased to men who wished to use it for grazing. The Taylor Grazing Act passed by the Congress in 1934 marked a fundamental change in livestock grazing in the Phoenix hinterland. It made it possible to set up and lease grazing districts on public lands.[12] Most of the range is used for breeding calves which are shifted to the farms such as those in the Salt Valley to be fed until they obtain their full growth.

Since about 1930 the sheep industry has also been consolidated in the hands of fewer owners. The market for the sheep lies primarily in the midwest. Most are not slaughtered. Rather, the young lamb is shipped east to farmers who then raise them until they are full-grown.

Thus, the livestock ranges of the Phoenix hinterland concentrated their resources on breeding herds and the raising of young calves, and the large forage farms in the irrigated valleys near Phoenix concentrated their resources on the growing of alfalfa, sorghums, and other forage enabling them to become feeder ranches for cattle from the Arizona range and ranges in nearby states and even Mexico, Since the cattle are fed cottonseed cake as well as alfalfa and silage, even the cotton farms in the irrigated valleys near Phoenix are linked up to this chain of livestock production.

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In summary, the farms in the hinterland of Phoenix, so important to the growth of processing, distribution, and service function in Phoenix, range from the small intensively-cultivated irrigated tracts producing cash crops and the feeder ranches in the valleys near Phoenix to the huge cattle outfits requiring extensive range territory on the margins of the Phoenix hinterland.

The relative importance of agricultural production on the farms of the Arizona hinterland of Phoenix at the close of this period of the commercialization of agriculture can be seen from the following statistics: In 1938, the cash income from Arizon farm and ranch production was fifty million dollars. The principal commodities marketed in order of value were: 14 million dollars from cattle and calves; 11 million dollars from cotton lint and cotton seed; 3 million dollars from commercial hay and alfalfa seed; 2½ million dollars from sheep, lambs and wool; 1¼ million dollars from eggs and chickens; 0.8 million dollars from wheat, and 0.7 million dollars from citrus fruits.[13]

The large increases in the agricultural production of the hinterland brought large increases in the population of the hinterland, and propelled the growth of Phoenix from a small frontier town into a modern metropolis.

Because the resource base of the Phoenix hinterland was ideal for the growing of the cash crops of cotton, winter vegetables, fruits, and cantaloupes, and for the raising of livestock, these products could be produced at comparatively low costs; hence, the hinterland of Phoenix had what is called a comparative advantage in these products relative to most regions in the nation.

The completion of the national rail transportation network integrated all regions of the nation into a national competitive economy. Consequently, each region of the nation could use its particular combination of physical and human resources together with its relative location in the national transportation grid to its best advantage by specializing in the production of goods and services in which it had a comparative cost advantage relative to other regions. Thus, the hinterland of Phoenix could specialize in cotton, winter vegetables, fruits, sheep and cattle. The Corn Belt could specialize in corn, soybeans, and hogs; and the American Manufacturing Belt could continue to specialize in manufactures.

A national system of regional specialization resulted in each region having a surplus production over local consumption of the products in which it specialized, with shortages of other goods. Thus, regional specialization was the basis for inter-regional trade.

Inter-regional trade required central places: central places in the Eastern Manufacturing Belt, in the lumber regions, in the Corn Belt, and in the Southwest region. Phoenix developed as the dominant central place in the facilitation of the inter-regional trade of the Southwest region.

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As Phoenix developed into the dominant central place in the region, its central place functions reflected the activities in its hinterland, and its position in the national economy and geography. Many of the central place functions performed in Phoenix are performed for the cash crop farms and feeder ranches in the irrigated valleys of its hinterland. Phoenix became the focal point to where cotton, winter vegetables, cantaloupes, fruits, and small grains were shipped, stored, processed, packaged, and shipped to other regions.[14]

Since agricultural activities always involve a time lag between the time money is laid out for seed, fertilizer, labor, and other production expenses, and the time the money is returned to the producer at the point of sale after harvest, a need is created for the financing of agricultural production. Since Phoenix was the processing center for the agricultural products of its hinterland, it also became the dominant financial and banking center for its hinterland.[15]

The movement and processing of the cotton crop illustrates the intimate relationship and mutual dependence between Phoenix and its agricultural hinterland. Phoenix receives the cotton crop of its hinterland. The cotton is ginned and shipped to factories in other regions of the nation. Cotton oil processed in Phoenix's oil mills is also shipped to other manufacturing cities, principally Los Angeles. The residual cake or meal is shipped to feeder ranches in the irrigated valleys of its own hinterland where it brings good prices as stock feed.[16]

Other central place functions performed in Phoenix are performed for the livestock ranches of its hinterland. Thousands of head of cattle are slaughtered in Phoenix and shipped to other places in refrigerated trucks. Additional thousands are shipped alive to the Los Angeles Stockyards. The enormous population of the Los Angeles area provides much of the demand for Arizona livestock. Because Los Angeles is relatively close to the hinterland of Phoenix, it is able to compete effectively with Phoenix for the livestock slaughtering and processing function.

Phoenix performs the marketing function facilitating the transfer of cattle from the breeding ranches of the range to the feeder ranches in the valleys of its hinterland.

Phoenix also became the central place in the region in the receipt of goods from other regions, and the distribution of these goods to its hinterland via its wholesale and retail outlets.

Both inter-regional and intra-regional trade and distribution implies a transfer of goods. Since Phoenix was the center of the transfer of the goods of the Southwest, it also became the major mainline railroad center, When the Southern Pacific line into Phoenix was completed in 1926. Since this was a period when hard surfaced roads were being constructed, it also became the major node in the regional farm to market road network.

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The importance of these central place functions to Phoenix can be seen from its industries and stores: citrus and vegetable packing houses, creameries and dairies, flour mills, meat packeries, cotton gins and oil mills, breweries and distilleries, general merchandise warehouses and wholesale firms, and numerous and varied retail and service outlets.

In conclusion, this period in the growth and development of Phoenix and its hinterland ushers out the last vestiges of the open range, the small farmer orientated to local markets, and of the independent prospector. The period is also marked by the phenomenal development of the great natural resources of its hinterland -- minerals, grazing land, water power, and vast acreage fertile under irrigation. With the acceleration of resource development in the hinterland, there was a concomitant transformation of Phoenix from a frontier town into a great metropolis and distribution center.

The Second World War is a good time to end this period in the development of Phoenix for the post-war period was still another and more critical threshold in the development of Phoenix. By the end of the war, the tourist business had become a leading source of income to Phoenix and its hinterland.

THE MODERN PROFILE OF PHOENIX (circa 1945 to 1965)

Today, Phoenix is a desert metropolis with a population of over half a million located in the center of the oval valley of the Salt

River -- a valley reclaimed from a natural wasteland into an agricultura area made fertile through the modern technology of irrigation.

Phoenix is noted for its healthful, dry, warm, climate, for its rich irrigated agriculture, and for its rapidly expanding manufacturing industry, especially in the field of electronic components. Much of the economy of Phoenix, as in the past, depends upon water -- water obtained and distributed via man-made methods from the Roosevelt Dam, some 75 miles northeast of Phoenix, and from other enormous dams on the Salt and Verde Rivers.

Unlike most major American cities, Phoenix is a relatively new city, dating from 1871. But, the growth and development process of Phoenix is similar to that of other American cities in that its growth and development was not uniform over time. It was characterized by several critically important thresholds which ushered in an acceleration of a previously relatively stable growth rate. Of the several critical thresholds in the growth of Phoenix -- the influx of white pioneer settlement, the completion of massive irrigation projects, and the completion of massive irrigation projects,
the Southern Pacific into Phoenix in 1926, the post World War II period has been the most critical, significant, and phenomenal.

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After the Second World War, Phoenix experienced an enormous influx of new residents. They were attracted by the climate and the beautiful desert-mountain scenery, by new job opportunities created by the location in the environs of manufacturing plants and by the rapidly expanding tourist and convention business.

In the short span of a decade in this post war period, the population of Phoenix increased 311% from 107,000 in 1950 to 439,000 in 1960. The 1960 Census of Population also revealed that one out of every three residents in Phoenix had been living elsewhere in 1955. On the map, there was a tremendous areal expansion of Phoenix by annexation from a 1950 area of 10 square miles to 187 square miles in 1960.[17]

On the national map, Phoenix appears as one of the few concentrations of population in the entire Intermontane West. In 1950, Phoenix was one of only four urban centers with more than 100,000 inhabitants in this region. The other three cities were Salt Lake City, Spokane, and El Paso.[18]

Of the several "C's" -- climate, cotton, citrus, cattle, and copper -- which characterized the economic life of Phoenix and its tributary area, climate is the most important source of income and employment for the city of Phoenix.

The climatic resource of Phoenix makes it a central place for the performance of recreation functions for the entire nation. The climate of Phoenix is warm and dry. The mean January temperature is 51, making it the coolest month of the year. The mean monthly temperature rises steadily to a mean July temperature of 91, with many days in July exceeding 100. Throughout the year, Phoenix enjoys 86% of the possible sunshine. Although the climate is semi-tropical, the mean annual precipitation of 7.2 inches is far less rainfall than is usual in semi-tropical regions.[19]

Although the warm, dry climate was basic to the recent influx of tourists and retired residents, climate alone cannot account for this recent influx. Climatic conditions have not changed since Phoenix was a small frontier town; yet, the tourist influx is essentially a post World War II development.

Other reasons responsible for the growth of Phoenix into a major tourist center are to be found in the evolving economic, technological, and social structure of the entire nation.

The revolutions in the technology and organization of production occurring throughout the United States since Phoenix was a frontier town made possible tremendous increases in the productivity of the American worker. During the same period, the social structure evolved to the extent that the American worker generally shared the rewards of his increased productivity in terms of more real income during his productive years
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and a guaranteed minimum income in his retirement years. The rewards of increased productivity were also passed on to the American worker in terms of more leisure time and longer vacations. In the post World War II period, the American worker, with his increased real income, could command such luxuries as travel, vacations and retirement in a pleasant climate.

The technological changes in communications and transportation united and integrated the nation. With mass and nationwide communications and advertising, the benefits of a vacation or retirement in Phoenix could be sold to the entire nation on radio, television billboards, and in newspapers and magazines.

The transportation revolutions were equally significant in the growth of Phoenix as a tourist center. The enormous rise in automobile ownership, the development of hard surface interstate roads, more recently the development of interstate freeways, the completion of a nationwide rail network with improvements in the speed and safety of rail transportation, and the development of fast, safe intercity jet air travel made the climatic benefits of Phoenix accessible to a great number of people.

Therefore, while climate was necessary to attract the tourist to Phoenix, so were the changes taking place in American life. These gave the worker more real income and more time for vacations. These provided him with more information on the merits of a vacation in

Phoenix, together with the transportation movements which made Phoenix more accessible in terms of time and real income.

With its warm dry climate, and with the progress throughout the American scene in this post war period, Phoenix has gained national importance as a winter resort, recreation, and retirement area as well as a beneficial area for persons suffering from respiratory disorders.

In Phoenix, the tourist function is reflected in increased sales for its retail and wholesale merchants, and in the revenue obtained from the lodging of the tourist. According to the 1963 Census of Business, the Phoenix SMA had 565 hotels, motels, and tourist courts with annual receipts of 34 million dollars and an annual payroll of 8½ million dollars.[20]

Untily recently, manufacturing has been only a minor element in the economy of Phoenix. Located several thousand miles west of the American Manufacturing Belt, and having to compete with Pacific coast centers of manufacturing, Phoenix developed a manufacturing industry which was almost exclusively raw material based primary processing. As late as 1950, 71% of Arizona's manufacturing employment was concentrated in the primary processing of raw materials. In the United States, as a whole, only 47% of manufacturing employment was engaged in the primary processing of raw materials.[21]

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The manufacturing functions of Phoenix illustrate this basic orientation to primary processing -- for example, chemicals are processed into dynamite, hides are tanned, saddles are made from hides, milk is canned, citrus and vegetables are processed and packaged, meat is packed, and cotton is ginned. However, hardly a pound of Arizona cotton or wool is spun into cloth in Phoenix, and not an ounce of Arizona copper is fabricated in Phoenix.[22]

According to recent statistics, Arizona and California are the only states outside the American Manufacturing Belt that specialize in the "rapid-growth sectors of manufacturing activity."[23] Rapid-growth manufactures produced in Phoenix include aluminum, aircraft, air-conditioning equipment, and electronic components.

In the period from 1954 to 1958, manufacturing employment in Phoenix almost doubled from 7,700 to 14,700. During the same period, the value added by manufacturing in Phoenix more than doubled from 58 million dollars to 143 million dollars. Today, there are approximately 500 manufacturing establishments in the city of Phoenix, thus making manufacturing for the first time one of the more important sources of employment and income.[24]

As a central place, Phoenix performs many and varied central place functions at different levels of specialization for the nation, the state of Arizona, and for its entire tributary of the Southwest. To understand the nature of Phoenix as a central place, and the central place functions performed in Phoenix, it is necessary to develop the concept of an urban hierarchy.

The concept of an urban hierarchy could be illustrated with the aid of a three dimensional population map of the United States. Such a map could be constructed by representing the population of cities by placing stacks of poker chips of various heights in proportion to the population of each central place on the map. Such a map would show an enormous stack of chips representing New York at the top of the national urban hierarchy; very high stacks representing Chicago, Philadelphia, and Los Aggeles; high stacks representing such cities as Phoenix, the Twin Cities, Seattle, Detroit, Atlanta, and Dallas; medium size stacks representing such cities as Madison and Peoria; smaller stacks representing major county seat trade centers and small manufacturing cities; and a tremendous number of very tiny stacks representing the small towns and hamlets throughout the nation.

The heights of the chip stacks would show the tremendous variation in the size of central places. The few larger stacks together with the tremendous number of smaller stacks would show the progressive increase in the number of central places at the base of the urban hierarchy.

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cities to concentrate only in certain regions such as the Eastern Seaboard, with most regions of the nation dominated by a single large city with a tributary area around it containing several medium size cities, and a tremendous number of small central places throughout the region.

From the position of Phoenix in the national urban hierarchy, it can be seen that the number of central place functions performed for the entire nation would be rather limited, since Phoenix must compete for these functions with larger cities much higher in the national urban hierarchy. Most central place functions performed for the entire nation such as corporate stock transactions, publishing, and corporation home offices, locate only in cities such as New York, Chicago, Los Angeles and other cities at the top of the national urban hierarchy. Some national central place functions locate more on a resource basis than on the position of the central place in the national urban hierarchy. Hence, central place functions performed in Phoenix for the entire nation are generally limited to the functions of tourism and business conventions based upon its pleasant climate.

By narrowing the focus from the entire national map showing the national urban hierarchy to the region of the Southwest, the regional urban hierarchy of the Southwest can be observed. Phoenix is the dominant central place at the top of the urban hierarchy of the Southwest. Proceeding down the urban hierarchy of the Southwest, one finds several medium size cities such as Tucson, Flagstaff, and Yuma, and a tremendous number of small cities and towns throughout the tributary area of Phoenix.

The level and range of functional specialization of any central place depends upon its position in the urban hierarchy. The small town and hamlet at the base of the urban hierarchy performs few central place functions. As one proceeds upward in the urban hierarchy, many more specialized functions are performed by larger central places.

Since the degree of functional specialization of a central place depends upon its position in the urban hierarchy, Phoenix performs the greatest number of central place functions and its functions are the most specialized of any central place in the Southwest region. However, other central place functions performed in Phoenix for its region are only indirectly related to its position in the regional urban hierarchy of the Southwest.

As the political capital of the state of Arizona, Phoenix performs governmental and administrative functions for the entire state. However, since the selection of a central place as a state capital was often more the result of a historical accident that of the position of the central place in the urban hierarchy of the state, these functions cannot be entirely explained within the framework of an urban hierarchy concept.

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Other central place functions performed in Phoenix, such as the processing and shipping of the farm products from the irrigated valleys of its tributary area, cannot be understood entirely in terms of the urban hierarchy concept. Although Phoenix is both the dominant urban place and principal processing center of the region, processing functions do not generally locate in a central place entirely because of its predominance in the regional urban hierarchy. Thus, the processing functions performed in Phoenix are probably the result of factors other than its position in the urban hierarchy. These factors include the proximity of Phoenix to the irrigated farm districts and its superior accessibility to the national market from its position of a major node on the regional and national circulation system.

The position of Phoenix as the major distribution center of the Southwest is a product of its position in the regional urban hierarchy. Wholesalers in Phoenix receive the goods of other regions and distribute these goods throughout the Southwest. Phoenix wholesalers ship some types of goods to retail outlets in almost all of the central places in the urban hierarchy of its hinterland. These goods are mostly convenience type goods such as drugs, groceries, hardware, tools, and general merchandise -- the type of goods that can be economically marketed by retail merchants in small central places which have their own restricted markets or hinterlands for these goods. Other types of goods can generally be economically marketed only in the retail outlets located in urban places such as Phoenix at the top of the regional urban hierarchy with an extensive market area for these goods which includes both Phoenix and its entire tributary area of the Southwest. Such goods would include fashionable clothing, expensive jewelry, books and stationery.

Thus, in terms of the distribution of goods, there is no single central place pattern for all types of goods. While the small towns in the Phoenx hinterland are economically capable of performing unspecialized retail distribution functions in the convenience goods line, more specialized retail functions must be reserved to only a few cities in the region. The most specialized retail functions can be performed economically only by the department stores and specialty shops in Phoenix. Hence, both the number and specialization of distribution functions is a function of the size of a central place in the urban hierarchy. While Phoenix performs all of the distribution functions performed in smaller centers in the region, it also performs many more specialized distribution functions.

Since there is no single central place pattern in a region for the marketing of all types of goods, there is no single market or single pattern of tributary areas for all types of goods. Since Phoenix performs most of the wholesaling functions for the entire region, the wholesale tributary area of Phoenix for most goods would include the entire region. Similarly, the
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market area for the highly specialized retail functions in the convenience line of goods performed in small central places throughout the region, there are as many tributary ar market areas as there are central places performing these functions. Hence, for some goods, each of the central places in the region has its own tributary or market area extending outward from it into the hinterland. These tributary areas of small central places often overlap with the tributary areas of other central places. While the tributary area of Phoenix can include the entire region for some wholesale and retail functions, for other types of goods, it is restricted to the city and a rural tributary area not much larger than the rural tributary areas of the smallest towns in the urban hierarchy. Thus, one cannot conceive of a single uniform tributary area projecting outward from Phoenix into the hinterland as applicable for the distribution of all types of goods. For each type of goods, there is a unique pattern of market or tributary areas in the region.

The concept of an urban hierarchy is equally important in an understanding of the service functions performed in Phoenix for its hinterland. Some services such as general medical care and small town banking functions can be provided for the region in a large number of smaller urban places with restricted hinterlands for these services. Other services such as specialized medical services, legal services, and insurance services can be economically performed only in central places of sufficient stature in the urban hierarchy. Hence, in addition to performing relatively unspecialized functions for the city and a restricted rural hinterland, Phoenix performs other more specialized services with tributary areas including the entire Southwest region. Phoenix performs both the greatest number and the most specialized functions in the urban hierarchy of the Southwest.

Statistics from the 1963 Census of Business reveal the importance of service functions in the economy of Phoenix. In 1963, there were 3,437 service establishments in Phoenix with annual receipts of 151 million dollars and an annual payroll of 42 million dollars.[25]

The significance of its portion both in the national and regional urban hierarchy is obvious from the central place functions performed in its stores, banks, hospitals, and offices. The department stores, speciality shops, wholesale houses, medical clinics, large banks, offices, insurance firms, and hotels in Phoenix are all testimony to the position of Phoenix in the urban hierarchy.

FOOTNOTES

1. Edwin Corle, The Gila River of the Southwest.
2. Ibid.
3. Ibid.
4. Workers of the Writers' Program of the Works Projects Administration in the State of Arizona, Arizona: A State Guide.
5. W.P.A. Writers' Program.
6. Ibid.
7. Ibid.
8. Ibid.
9. Ibid.
10. Ibid.
11. Ibid.
12. Ibid.
13. Ibid.
14. Otis Duncan et.al., Metropolis and Region, p. 550.
15. Ibid.
16. W.P.A. Writers' Program, Arizona: A State Guide.
17. 1962 County and City Data Book.
18. White, Regional Geog. of Anglo-America, p. 342.
19. 1962 County and City Data Book.
20. U.S. Department of Commerce, Census Bureau, 1963 Census of Business "Selected Services."
21. Harvey S. Perloff et.al., Regions, Resources and Economic Growth.
22. W.P.A. Writers' Program, Arizona: A State Guide.
23. Perloff, Regions, Resources, and Economic Growth.
24. U.S. Department
Bureau, 1958
25. 1963 Census of

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24. U.S. Department of Commerce, Census Bureau, 1958 Census of Manufacturing.
25. 1963 Census of Business.

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APPENDIX # 1

GENERAL KEARNEY'S REMARKS ABOUT THE PIMA INDIANS

[These remarks were made by General Kearney who found the Pima Indians occupying the area near present-day Phoenix in 1846.]

These Indians we found living comfortably, having made a good crop this year, and we remained with them two days. . . . The. . . Indians, who make crops of wheat, corn, vegetables, etc., irrigate the land by water from the Gila.

APPENDIX # 2

LAND SALE IN PHOENIX, 1870

[This quotation is from Edwin Corle, The Gila, River of the Southwest, (New York: Rinehart and Co., 1951), p. 326.]

. . . . The Prescott Miner for December 7, 1870, carried an advertisement which read:

Great Sale of Lots

at

Phoenix, Arizona
On December 23 and 24.

A Prescott citizen, Judge Berry, bought the first lot in this great sale for $104. . . . And in 1950 $104 wouldn't buy one front foot of the same lot. Yet there were many who believed the judge was badly taken in at that 1870 sale. Most residents thought that anything over $25 for a city lot, where there was no city, was outrageous. And many of these residents lived long enough to regret their shortsightedness.

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Grade Five

Unit: The West
5 Sub-Unit B:Case Study on
Los Angeles and the Southern
Pacific Coastal Region

RESOURCE UNIT 5/2

These materials were developed by the Project Social Studies Curriculum Center of the University of Minnesota under a special contract with the Cooperative Research Division of the United States Office of Education, effective prior to July 14, 1965. (Project HS-045)

- 1967 -

OBJECTIVES

GENERALIZATIONS

1. Every place has three types of location: a position, a site, and a situation.
   a. Location is a position which sets a phenomenon at a specific point on the earth's surface usually designated by an abstract grid and described in terms of latitude and longitude.
   b. Site relates a phenomenon to the detailed physical setting of the area it occupies.
   c. Places can be located in terms of their situation; situation describes a phenomenon in areal relationship with other phenomena with which it is associated, including distance and direction from such phenomena.
2. Temperature is affected by the distance from the equator, elevation, distance from warm water bodies, prevailing winds from certain directions, etc.
   a. The ocean and other large bodies of water do not heat up so rapidly as land nor cool so rapidly as land.
   b. Winds which blow over warm bodies of water (or land areas) carry warm air to nearby land areas.

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3. Rainfall is affected by distance from bodi
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physical features which block winds carryi
moisture.

   a. Warm air can hold more water than cool
   therefore warm air picks up moisture an
   the cooling of air leads to precipitati

      1) Winds which have been warmed and hav
      picked up moisture crossing large bo
      of warm water tend to cool as they r
      over mountains and so drop their wat
      on the side of the mountain from whic
      they come.

      2) Winds which cross cold water current
      cooled and will pick up moisture rat
      than dropping it as they cross land
      which are warmer than the water.

      3) As winds descend into valleys from
      mountain ridges, they are warmed and
      tend to pick up moisture.

4. Deserts have very little rain and precipita
is very irregular from one year to another.

5. Differing crops need differing amounts of r
fall and differing temperatures and number
frostfree days in order to grow; they need
water and dryness at different times durin
their period of growth.

6. Vegetation and what can be grown is affected in part by soil.

7. Population is distributed unevenly over the earth's surface.

   a. Large cities are characterized by a large number of people per square mile.

8. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

   a. The significance of location depends upon cultural developments both within and outside a country or region.

   b. Types of agriculture in a region depend upon man's cultural values, perceptions, and technology as well as upon climate, soils, and topography.

   c. The value of land tends to be related to a number of factors such as moisture, soil, temperature, growing season, population density, and transportation facilities.

   d. Man changes the character of the earth.

   e. Climate may set up limitations upon man's activities given a specific level of technology, but man has learned to overcome many of the earlier limitations.

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1) Irrigation makes it possible to grow crops on land which otherwise would be too dry.

f. Discoveries of new resources in surrounding areas represent a change in situation,and a change in situation can greatly affect man's use of his environment at a particular site.

g. New innovations and discoveries open up new fields of production and/or increase production in older fields.

9. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

a. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

b. Today factories and other producers tend to locate close to the source of needed raw materials if these materials are perishable or heavier or bulkier than their finished product; factories tend to locate closer to their markets than to the source of needed materials if their products are heavier and bulkier than the raw materials and if their products are perishable.

c. Power for industry may be obtained from the use of water.

10. A change in situation brings about a corresponding change in the use of a site.

11. A place needs cheap and rapid transportation in order to carry on much trade with other places or even to carry on the normal business activities of a city.

    a. Towns need means of shipping goods in and out; they are likely to grow up where transportation is good, particularly where different types of transportation meet.

        1) Cities which become big trading centers tend to grow up where there is a break in transportation and so where goods must be moved from one type of transportation to another or from one company's transportation facilities to those of another company.

12. Specialization makes for interdependence.

    a. People in most societies depend on people who live in other communities for certain goods and services and for markets for their goods.

b. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

13. The greater the population density and the more complex the technological system, the greater the need for certain general governmental services such as roads, public health facilities, public water supply, and institutions for making and enforcing laws.

14. Other things being equal,prices rise when the demand for a good exceeds the supply for the good.

15. Although culture is always changing, certain parts or elements may persist over long periods of time.

16. Changes in one aspect of a culture will have effects on other aspects; changes will ramify, whether they are technological, in social organization, in ideology, or whatever else is a part of the cultural system.

SKILLS

1. Sets up hypotheses.

2. Gains information by studying pictures.

3. Interprets map symbols in terms of the legend.

4. Uses map scale to estimate distances.
5. Compares distances.
6. Draws inferences from a comparison of different map patterns of the same area.
7. Makes and interprets timelines.
8. Applies previously-learned concepts and generalizations to new data.
9. Tests hypotheses against data.
10. Generalizes from data.

OBJECTIVES

G. Every place has three types of location: a position, a site, and a situation.

S. Interprets map symbols.

G. Site relates a phenomenon to the detailed physical setting of the area it occupies.

S. Interprets map symbols.

G. Every place has three types of location: a position, a site, and a situation.

G. Location is a position which sets a phenomenon at a specific point on the earth's surface, usually designated by an abstract grid and described in terms of latitude and longitude.

S. Applies previously-learned concepts and generalizations to new data.

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OUTLINE OF CONTENT

I. Los Angeles is located on the Western side of the United States near the Pacific coast at about the 33rd parallel.

- A. Los Angeles is located on a coastal lowland surrounded by mountains. This coastal lowland is connected by narrow gaps in the surrounding mountains to several valleys: The San Fernando Valley, the San Gabriel Valley, The Valley of the South, and San Jacinto Basin.

- B. Los Angeles is warmer than other cities in the U.S. at the same latitude; it has a Mediterranean climate.
  - 1. The relatively low latitude means that the more direct rays of the sun bring greater warmth to Los Angeles than many other places further north. This results in a mild winter and often a hot summer.

TEACHING PROCEDURES

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1. Obtain a good relief map of the United States. Ask pupils to imagine that they are sailing along the Western coast of the U.S., starting from Seattle and traveling south. Ask them to describe with the help of the relief map what they might see along the coast. When they make an abrupt turn to the east and become aware of a large coastal lowland, tell them they have reached the city of Los Angeles.

Relief

2. Change to a more detailed relief map of the Los Angeles area. Again have pupils note the coastal lowland. Also have them locate the connecting valleys and their names.

Relief
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3. Ask pupils to identify the latitude of Los Angeles. What other city which they have studied lies close to this latitude? (Have pupils check on a map.) Perhaps have pupils locate other cities on the same latitude. Then let them look up the January and July temperatures for Los Angeles and these other cities. Also have pupils look up differences in precipitation for these cities. Review reasons for the differences. (If pupils did not spend some time studying the California climatic conditions during the overview unit, use some of the activities suggested in that unit at this point.)

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Angeles area. so have them	Relief map of California or Los Angeles area.
les. What o this ps have pupils let them look geles and these nces in pre- r the differences. California se some of oint.)	Physical-political map of U.S., giving major cities.

G. Temperature is affected by the distance from the equator, elevation, distance from warm water bodies, prevailing winds and by physical features which block winds from certain directions.

G. Rainfall is affected by distance from bodies of water, wind directions, temperature, and physical features which block winds carrying moisture.

G. Winds which have been warmed and have picked up moisture crossing large bodies of warm water tend to cool as they rise over mountains and so drop their water on the side of the mountain from which they come.

G. As winds descend into valleys from mountain ridges, they are warmed and tend to pick up moisture.

G. Warm air can hold more water than cool air; therefore warm air picks up moisture and the cooling of air leads to precipitation.

G. Winds which cross cold water currents are cooled and will pick up moisture rather than dropping it as they cross land areas which are warmer than the water.

G. The ocean and other large bodies of water do not heat up so rapidly as land nor cool so rapidly as land.

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2. The temperature is affected by proximity to the Pacific Ocean and by the ocean currents.

3. Los Angeles and its surrounding area have needed less rainfall than the Pacific Northwest, the Twin City area, the New York area, or the Birmingham area.

G. Winds which blow over warm bodies of water (or land areas) carry warm air to nearby land areas.

S. Applies previously-learned concepts and generalizations to new data.

G. Differing crops need differing amounts of rainfall and differing temperatures and number of frostfree days in order to grow; they need water and dryness at different times during their period of growth.

S. Applies previously-learned concepts and generalizations to new data.

G. Situation describes a phenomenon in areal relationship with other phenomena with which it is associated.

G. Winds which have been warmed and have picked up moisture crossing large bodies of warm water tend to cool as they rise over mountains and so drop their water on the side of the mountain from which they come.

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C. The Los Angeles River runs through the city on its way to the ocean. This made possible irrigation in the early years of the city. This and other rivers along the southern coast have their source in the Sierra Nevada Mountains which are 14,000 feet or more above sea level.

4. Ask: Can you think of any problems which this amount of rainfall and the time of year when it falls might create for farmers? Why would the temperatures in the area make the problem of sparce rainfall more severe? (This discussion should bring out the need for irrigation and eventually the reason for locating the Pueblo of Los Angeles on a river terrace.)

5. Have pupils look once more at relief maps of the Los Angeles area and of southern California. Ask: Can you see any possible source for water to irrigate farm lands? Where would the Los Angeles River get its water, if rainfall in the Los Angeles area is so sparse? Perhaps show pupils pictures of some of the mountains in the Sierra Nevada range. Ask: Would you expect to find much rain in these mountains? Why? Then have pupils locate on a map the many rivers which lead from the mountains to the sea. Project pictures of them if possible.

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Relief map of the U.S. or California.
Photos of Sierra Nevada Mountains.

G. Irrigation makes it possible to grow crops on land which otherwise would be too dry.

S. Uses map scale to estimate distance.

D. Los Angeles

S. Compares distances.

G. Places can be located in terms of their situation; situation describes a phenomenon in areal relationship with other phenomena with which it is associated, including distance and direction from such phenomena.

E. To travel by
Los Angeles,
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S. Interprets map symbols.

G. Deserts have very little rain and precipitation is very irregular from one year to another.

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D. Los Angeles faces the Pacific Islands and the Orient.

E. To travel by land from the eastern part of the country to Los Angeles, one must go great distances and must cross both deserts and mountain ranges.

6. Have a pupil use a globe to point out the relative location of Los Angeles to Hawaii, Japan, and the Philippine Islands. He might make a chart comparing distances to these places from Los Angeles and from Seattle and New York by water. Ask: What possible advantage does Los Angeles' location give it?

Gl

7. Have several pupils use the globe and a string to prepare a chart comparing the distances by land from Los Angeles to the other cities studied earlier during the course. They might also prepare a chart comparing the distances by land from New York to Los Angeles and to each of the other cities studied. Discuss: What disadvantage must Los Angeles have faced during the early years of its growth? Why?

Glo

Remind pupils of the pictures they have seen of the Sierra Nevada Mountains. Also have them look at a map to identify other mountains and to locate deserts between Los Angeles and the eastern part of the United States. Show pictures of some of these deserts. Ask: How would these natural features have affected transportation to Los Angeles overland from the East in the early days of our history?

For

the relative location of Philippine Islands. He s to these places from York by water. Ask: What location give it?	Globe and string.
a string to prepare a from Los Angeles to the e course. They might also s by land from New York to ities studied. Discuss: e faced during the early	Globe and string.
e seen of the Sierra Nevada ap to identify other mountains les and the eastern part of ome of these deserts. Ask: affected transportation to the early days of our history?	For desert pictures, see Life, March 23, 1962.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

S. Tests hypotheses against data.

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Angels) was fo
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B. The pueblo was
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II. We look at Los Angeles as a Spanish settlement of 1800.

A. A pueblo named "el Pueblo de Nuestra Senora La Renia de Los Angeles" (The town of our Lady of the Queen of the Angels) was founded in 1781 on the banks of the Los Angeles river a number of miles from the ocean.

B. The pueblo was established by the Governor of California, Philipe de Never, to raise supplies for the troops stationed in California.

C. Its location was influenced by the earlier establishment of a mission, San Gabriel, which had become extremely successful at raising agricultural crops.

8. Write the name "el Pueblo de Nuestra Senora La Renia de Los Angeles" on the board. Ask pupils to identify the language. If your school teaches Spanish in the elementary grades, this will be simple. Many fifth grade pupils will be able to guess correctly. When they have properly identified it as Spanish, help with a translation.

   When pupils have associated this name with the present site of Los Angeles, ask such questions as the following:

   a. Why do you think this is a Spanish name?

   b. Why would Spanish-speaking people be in this area?

   c. Where would the Spaniards have come from?

   d. Who might they have found living in California when they arrived?

   e. When one nation conquers another, who usually moves into the conquered nation first? (troops)

   f. Why would the conquering country want to start a town? (for defense? for supplies?)

   g. What can you guess about the type of houses which the Spaniards might have built?

9. Have pupils check their guesses by reading about the early history

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Histories of California.
Nadeau, Los Angeles, from Mission to Modern City. (The teacher may wish to read aloud sections of pp. 6-8.)

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Vegetation and what can be grown is affected in part by soil.

S. Applies previously-learned concepts and generalizations to new data.

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D. The Pueblo of 1800 was strictly an agricultural community. It was founded on a terrace of the Los Angeles river so that water could be brought from an intake up-stream for irrigation.

E. Citrus groves were located near the Pueblo and the Mission. Farther away on the ranches long-horn cattle were grazing.

   a. Citrus fruits and grapes were brought by the Spanish priests from their homeland.

   b. The climate was favorable to the growing of this fruit.

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F. By 1800 Los Angeles was a town of about 300 residents. Many of the residents were retired soldiers who preferred to remain in California. Some were Indians--remnants of the Indians who were already there when the Spanish arrived in 1769. Spanish was spoken by the residents and most of the houses were of Spanish-style architecture.

III. We look at Los Angeles in 1850 after it came under the influence of Americans and after the gold-strike in the San Francisco area.

A. Los Angeles of 1850 was a typical frontier town of about 1,610 residents. Many new crude buildings resembled those of other frontier towns. Because adequate law enforcement had not yet been established,many men carried a pistol or a knife.

of Los Angeles. Also have them read descriptions of the early days of the city. Discuss their hypotheses in terms of these readings. Also ask: Why was the pueblo located here, rather than on the ocean? How did the settlers get water for crops? Why do you think they grew citrus fruits?

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10. Have pupils look up the population of Los Angeles in 1800. Compare it with that of some small town which the pupils know. Or compare it with the number of children in the pupils' school. Ask: Why do you think the town was still so small in 1800?

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Perhaps show a painting of Los Angeles of about this time.

11. Discuss frontier towns with your pupils. From information which they have acquired through the movies and television or through visiting restored frontier towns, they should be able to re-construct a fairly accurate picture of a frontier town. As an exercise you might have them look for pictures in elementary history books of other frontier towns.

U. S.

Now tell pupils that their picture of a frontier town represents Los Angeles in 1850 except for one thing. What is that? While

descriptions of the early days
es in terms of these readings.
d here, rather than on the ocean?
rops? Why do you think they

Dederick, et. al., Your People and
Mine, pp. 309-310, 311
(last paragraph).
"Selected Readings on Los Angeles."

Los Angeles in 1800.
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"Student Almanac"
Weaver, People Use The Earth,
p. 20 (painting).

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G. The greater the population density, the greater the need for more laws and for some institutions for making and enforcing laws.

S. Makes and interprets timelines.

S. Sets up hypotheses.

G. A change in situation brings about a corresponding change in the use of a site.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. The greater the population density, the greater the need for more laws and for some institutions for making and enforcing laws.
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A. EVALUATES EVENTS ON THE BASIS OF THEIR EFFECTS UPON INDIVIDUALS AS HUMAN BEINGS.

B. By 1850 two sign
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B. By 1850 two significant things had taken place to change the little Spanish pueblo. First, American troops had conquered the area in 1846, and second, gold was discovered in northern California in 1848.

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most frontier towns were built on sites where there had been no previous town, our frontier town of Los Angeles was developed from a Spanish pueblo. Discuss with them how a town retains some of its past in the present. Look around for some local examples of this generalization. Have pupils think of possible examples in Los Angeles.

Review with pupils what they learned from their study in grade 3 of a California mining community about problems of law enforcement. Ask: Have you come across any evidence of similar problems in other frontier towns? Point out that such problems did exist in Los Angeles in 1850. Discuss: Why would there be increasing problems of law enforcement as the town gets larger?

12. Have a pupil make a timeline to show certain events in the history of California. On it he should place the founding of the Pueblo in 1781, the settlement of 1800 which pupils studied earlier, and the settlement in 1850. He should also add the date for the discovery of gold in California. The teacher may have to tell the class more about these two events, although pupils who have studied the Center's third grade course should remember something about the gold strike and its effects on San Francisco.

    Ask: What effects do you think the American Conquest might have? Why?

    Perhaps tell the class (or read aloud sections of Nadeau) about how the Indians of the area were treated in the 1840's and 1850's. Discuss this treatment.

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For teacher use: Nadeau, *Los Angeles*,
pp. 13-14.

G. Discoveries of new resources in surrounding areas represent a change in situation, and a change in situation can greatly affect man's use of his environment at a particular site.

S. Sets up hypotheses.

G. People in most societies depend on people who live in other communities for certain goods and services and for markets for their goods.

G. Other things being equal, prices rise when the demand for a good exceeds the supply for the good.

G. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

G. Types of agriculture in a region depend upon man's cultural values, perceptions, and technology as well as upon climate, soils, and topography.

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2. People interested in farming began to buy land in the surrounding lowlands. This caused California's first land boom. Whole agricultural villages were started. One example is the present town of Anaheim which was established in 1857 by a group of German settlers.

13. Have pupils use the scale on a map to estimate the distance between the place where gold was discovered and Los Angeles. Discuss: How might this discovery affect the town at Los Angeles?

    When thousands of people come into an area what do they need first? (Food.) Where was food already being raised in California when the 49ers came? (Los Angeles.) Why might it be profitable to raise food as far away as Los Angeles, even though transportation was not so good in those days as now? (If necessary, review what pupils learned about demand and prices from the unit on the gold mining town in grade three.)

    Point out that Los Angeles now increased its production of agricultural supplies by putting many more acres of land in the surrounding valleys into production. Tell the class about the agricultural village of Anaheim and locate it on the map. Perhaps read aloud brief sections from Nadeau to explain what happened to the cattle raising in the area.

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Map of California.

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For teacher use: Nadeau, Los Angeles, pp. 46-57 (on decline of cattle-raising).

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

C. By 1850 a tr
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S. Generalizes from data.

S. Sets up hypotheses.

IV. We look at Los

A. Los Angeles
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G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

B. A number of

C. By 1850 a trend had been started which was to continue until the coastal lowlands and all adjoining lowlands were covered by citrus groves and vegetable gardens.

IV. We look at Los Angeles in the period from 1910 to 1914.

A. Los Angeles was still just a small town in 1900, but it began increasing significantly by the time of World War I.

B. A number of factors contributed to the growth of Los Angeles.

14. Tell the class about the trend toward citrus groves and vegetable gardens. Discuss: Did physical features of area determine what would be grown in the Los Angeles area?

15. Have pupils look up population figures for Los Angeles for the 1900 census. Ask: What had happened to the size of Los Angeles? Perhaps have pupils also look up the census figures for 1910. How much had Los Angeles grown in just ten years? How much had it grown in the fifty years from 1850 to 1900? What might have happened to bring about a great increase in growth in the early 1900's (Let pupils set up hypotheses.)

16. Divide the class into groups to investigate the following topics: (a) factors leading to a great increase in citrus groves in the late 1800's and early 1900's, (b) ways in which Los Angeles and the Central Valley area solved their water shortages in the period just prior to 1914, (c) the oil discoveries which lead to the development of an important petroleum industry. They should present their information to class, using the most appropriate methods which they can.

rus groves and , features of area ngeles area?	For teacher use: Nadeau, *Los Angeles*, pp. 60-61.
Los Angeles for to the size of k up the census s grown in just ifty years from bring about a 's (Let pupils	"Student Almanac."
e the following crease in citrus , (b) ways in rea solved rior to 1914, development of ld present appropriate	See references below for each group report.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Man changes the character of the earth.

G. The value of land tends to be related to a number of factors such as moisture, soil, temperature, and growing season, population density, and transportation facilities.

G. Towns need means of shipping goods in and out; they are likely to grow up where transportation is good.

G. The significance of location depends upon cultural developments both within and outside of an area.

G. A change in situation brings about a corresponding change in the use of a site.

G. Climate may set up limitations upon man's activities given a specific level of technology, but man has learned to overcome many of the earlier limitations.

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1. The citrus fields were expanded greatly after 1890.

   a. The coming of one transcontinental railroad to Los Angeles in 1869, (with a second connection in 1885) and the development of refrigerated freight cars (1880), made it possible for the Los Angeles area fruit growers to sell fruit in the east and so greatly expand their market; this led them to increase the amount of land planted to citrus fruits.

   b. The development of a navel orange with few seeds increased the demand for oranges among American consumers; however, increasing the production of navel oranges had to wait for the development of a method of grafting to grow such oranges without using seed.

2. Los Angeles and its hinterland obtained new water resources which permitted great growth of agriculture in the area and led to an increase in trade and in the size of Los Angeles.

17. After the group investigating the growth of the citrus industry has presented its information, discuss the following questions: What inventions and discoveries were necessary before the citrus growers could greatly expand their markets by selling fruit to the east? What other man-made feature was essential to take advantage of this potential market? How had man modified his physical environment? Why would the growth of citrus plantations bring about an increase in the size of Los Angeles?

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18. After the group investigating the Owens water diversion plan and early uses of the Colorado River have reported, ask: Why did the people of Los Angeles go to such expense and effort to build this system for bringing more water to Los Angeles? Why was the water needed? Why was so much money spent on bringing Colorado River water to the Central Valley? What effect do you think this

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Dederick, et. al., Your People And Mine, pp. 312-313.
Borchert and McGuigan, Geog. of the New World, pp. 298-299.

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Dederick, et. al., Your People And Mine, pp. 314-317, and map on p. 319.
Morgan, The Pacific States, pp. 57-59.

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G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

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G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

G. Towns need means of shipping goods in and out; they are likely to grow up where transportation is good, particularly where different types of transportation meet.

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a. Water shortages for Los Angeles and its immediate area were solved for a time by the construction of the Owens aqueduct to bring water from the Owen River in the east side of the Sierra Nevada, some 233 miles away. This aqueduct was completed in 1913.

b. Water to develop the dry but rich Central Valley area of California was obtained by diversion of waters from the Colorado River through the use of many ditches and new channels. This diversion was not completely successful but led to a big land boom in the Central Valley of California.

3. The discovery of oil in the 1890's, coming at a time when the development of automobiles had increased greatly the demand for gasoline, led to the development of an important petroleum industry in Los Angeles.

4. The people of Los Angeles decided that for future trade and growth, they needed a good harbor. They purchased land in an area where one could be constructed as well as land giving the city access to this harbor. Then the government built a big breakwater and dredged the harbor bottom to turn a poor harbor into an excellent one. In 1869 this San Pedro harbor was connected to Los Angeles by railroad.

new supply of water would have upon the Los Angeles area? How had man modified his physical environment by building the aqueduct and the diversion project.

19. After the group investigating the discovery of oil and the development of the petroelum industry has reported, ask: How did this discovery of oil lead to an increase in the size of Los Angeles? Suppose automobiles had not been invented around this time. Would the discovery of oil have had the same effects upon Los Angeles? Why or why not?

20. Remind pupils that Los Angeles had not been built upon the ocean. Then have the group investigating the development of a harbor for Los Angeles present its information to the class. Discuss: Why was such a harbor important in this period and not earlier? How did man modify the physical

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Weaver, People Use the Earth, pp. 20-23.

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Dederick, et. al., Your People and Mine, pp. 313-314.
Borchert and McGuigan, Geog.of the New World, p. 299.

Nadeau, Los Angeles, Ch. 8.

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Dederick, et. al., Your People and Mine, pp. 319-320 and map on p. 321.

Nadeau, Los Angeles, Ch. 7, (For teacher use).

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

G. New innovations and discoveries open up new fields of production.

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5. In 1911 one of the motion picture companies decided to locate in Los Angeles because of the great amount of sunshine; the weather made it possible to shoot movies more days than in the east where the industry started. Moreover, the Los Angeles area provided a great variety of landscapes for different types of pictures.

6. In 1912 the first airplane factory was built in Los Angeles to take advantage of the weather in the area, and also the workers available in the city. This was the beginning

environment by building this harbor? What effects would the harbor be likely to have upon Los Angeles?

21. After the group which investigated the beginning of the movie industry in Los Angeles has made its report, discuss: Why was the Los Angeles area better than areas in the eastern part of the country for making movies? What invention was needed before the climate and landscapes in the area could be used for making movies? Why would the development of a movie industry increase the size of Los Angeles? What other industries might grow up in the area because of the movie industry?

22. Tell the class that Glenn Martin built his first airplane factory in Los Angeles in 1912. Ask: What effect do you think this factory would have upon Los Angeles? Why was Los Angeles a good place to build an airplane factory? What other kinds of factories might be built in the area because of the airplane industry? Why?

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Dederick, et. al., Your People and
Mine, p. 311.
Borchert and McGuigan, Geog. of the
New World, pp. 299-300.

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G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

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S. Applies previously-learned concepts and generalizations to new data.

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S. Draws inferences from a comparison of different map patterns of the same area.

3. The metropol
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of a major industry in Los Angeles which was to bring in many workers to the area and lead to the development of many industries to feed supplies to the aircraft industry and to serve the workers.

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V. We look at Los Angeles today.

A. Los Angeles has become a large city which has spread out rather than up.

1. In recent years the trend has been to cut down the citrus groves and build homes and shopping centers. In one ten year period (1945-55) the citrus groves in the Metropolitan area were decreased by 43,880 acres.

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2. About seven million people now live in the Metropolitan area and the number is increasing by over 250,000 per year.

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3. The metropolitan area has not grown from a Central Business District outward, but has developed outward from each of the original agricultural villages through the valleys. This

23. Give pupils figures on reduction of citrus groves. Ask: Why do you think these groves have been destroyed? Show pictures of homes with yards still having some fruit trees.

24. Have pupils look up figures on the present-day population of Los Angeles. Compare with population of the largest city in pupils' own state and with the total population of pupils' state. Also have pupils compare the population with that of present-day New York City. Put figures on the board to show the estimated number of people added each year at the present rate of increase. Compare this figure with the population of some town pupils know. Discuss: How do you think people may have changed Los Angeles to take care of this many people?

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25. The growth of the metropolitan area should be studied with the aid of two maps. Obtain one map of the metropolitan area from the 1900 to 1930 era and another which was made after 1960. These maps should be detailed enough to show all major

Maps

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Maps of metropolitan Los Angeles in 1960 (or today) and in 1930 (or some such date).

G. Although culture is always changing, certain parts of elements may persist over long periods of time.

S. Gains information by studying pictures.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Large cities are characterized by a large number of people per square mile.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Population is distributed unevenly over the earth's surface.

S. Sets up hypotheses.

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means that the Central Business District is not as large or as congested as you would expect to find in a city of seven million.

4. The urban skyline is low. It was possible to spread out more than in New York City. With a lower population density, there was no need for high rise buildings; because of the possibility of earthquakes there has been a 150 ft. limit placed on the height of buildings.

    a. The average number of people per square mile is only one-fourth that of Chicago and one-sixth that of New York.

streets. Find one of the agricultural villages on the early map and then check its growth on the new map. Spend enough time on this exercise so that the students recognize that the major growth has been from each of these villages outward rather than from the Central Business District.

26. Obtain a good skyline picture of Los Angeles and another of New York. If they are large enough post them, or show them to the class by means of the opaque projector. Ask your students to describe the difference. Since they will have studied a unit on New York City, they should be most conscious of the lack of skyscrapers in Los Angeles. Ask: Why do you think there are so few skyscrapers in Los Angeles as compared with New York? Tell the class about the law limiting the height of buildings because of the earthquake danger. Ask: Can you think of any other reasons for the lack of skyscrapers even if this law had not existed? What do these pictures of Los Angeles tell you about the city?

Prepare and show a graph comparing population density per square mile in New York, Chicago, and Los Angeles. Ask: Why is the density so much less in Los Angeles when its total population is so large?

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For photos of New York, see unit on New York.
For pictures of Los Angeles, see:
Borchert and McGuigan, Geog. of the New World, p. 299.
Dederick, et. al., Your People and Mine, p. 308.
Weaver, People Use the Earth, p. 22.
Morgan, The Pacific States, pp. 30-31, (general views) and p. 65 (two pictures of Wilshire Boulevard).
Nat'l. Geog., Oct., 1962, pp. 482, 500-501.
Filmstrip: Los Angeles, Eyegate, frame 1, 23.

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Los Angeles. Ask:
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S. Tests hypotheses against data.

S. Sets up hypotheses.

G. Changes in one aspect of a culture will have effects on other aspects; changes will ramify, whether they are technological, in social organization, in ideology, or whatever else is a part of the cultural system.

G. A place needs cheap and rapid transportation in order to carry on much trade with other places or even to carry on the normal business activities of a city.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

"Student Almanac."

Now have pupils look at the photographs of New York and Los Angeles once again. Ask: Which city looks more spread out? Have pupils look up the number of square miles covered by the city of Los Angeles as compared with that covered by New York City. Does this data support their conclusions about size which they developed by comparing the pictures? Why do you think Los Angeles is more spread out than New York is? Perhaps show pupils the two pictures in Morgan showing Wilshire Boulevard in 1922 and in 1965. What had happened to Los Angeles in this period of time? What problems might such a spread give rise to for Los Angeles? (If necessary, ask: What transportation problems would arise from this kind of spread-out city?) Have pupils use a map to estimate the distance across Los Angeles from north to south and east to west. Compare these distances with distances across some metropolitan area they know. Then pupils can consider the Los Angeles problem in the light of traffic problems with which they are acquainted.

Remind pupils of the rock base in New York City. Point out that Los Angeles does not have such a base. Describe the geological features of the region. Then ask: What advantages would the rock base give New York over Los Angeles?

S. Generalizes from data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

B. Many people have
area by the clim
move to the area

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

C. Los Angeles has be

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B. Many people have been attracted to Los Angeles and the surrounding area by the climate. Some come when they retire, and others move to the area to work.

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C. Los Angeles has become an industrial center.

27. Most pictures of Los Angeles will show parts of the freeway system. Ask your students to compare transportation in Los Angeles with other large cities. When they discover that there are no subways, ask them why this is true. Once again the low density, sprawling character of Los Angeles will be an important factor. Have a pupil report on freeway problems in Los Angeles.

28. Ask: Why might so many people wish to go to Los Angeles to live? (weather, opportunities to work) Show pictures of outdoor living in Los Angeles and also some of the newer desert developments close to Los Angeles. Also show a picture of a Rose Bowl parade, with evidences of vegetation in the background. Ask: What does this picture show us about vegetation and climate on January 1 ? Why do you think people hold the Rose Bowl game in Los Angeles? Ask: Would you find such an area a good place in which to live? Why or why not? Point out that many people wish to swim even in the desert areas. Show a picture of man-made lakes which are developed by using polyethyline bottoms.

29. Have a pupil prepare graphs showing the number of employees in the top seven industries in Los Angeles and the top seven in New York. Have the class examine the graphs. Ask: Why are there differences? For instance, why isn't there an aircraft industry in New York City?

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Pictures of freeways in Los Angeles (e.g., Morgan, The Pacific States, pp. 28-30, 66-67.
Nat'l. Geog., Oct., 1962, p. 480.
Dederick, et. al., Your People and Mine, p. 828.
Filmstrip: Los Angeles, Eyegate, Frame 19.
For a written discussion, see Dederick, pp. 328-329.

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Why do you think people
es? Ask: Would you find
o live? Why or why not?
wim even in the desert
akes which are developed

Filmstrip: Los Angeles, Eyegate, Frame 9.
Nat'l. Geog., Oct., 1962, pp. 488, 492-493.
Life, March 23, 1962, cover and article (on desert living).

the number of employees
ngeles and the top seven
the graphs. Ask: Why
, why isn't there an air-

Statistical Abstract of U.S.
Other reference works.

G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

G. Some things are produced better in one place than in another because of climate, resources, access, people's skill, etc.

G. New innovations and discoveries open up new fields of production.

G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

1. The mild climate h
of the city in rec
came because of th

   a. The aircraft in
   flying weather
   on the aircraft
   161,000 people.

   b. The movie indust
   many days of sun
   landscape possib

1. The mild climate has been largely responsible for the growth of the city in recent years. Two major industries originally came because of this climate.

    a. The aircraft industry came because of the many days of flying weather and also because it was possible to work on the aircraft out-of-doors. Now this industry employs 161,000 people.

    b. The movie industry, which came to take advantage of the many days of sunshine and also the great variety of landscape possibilities, expanded rapidly after 1920.

30. Divide the class into groups to investigate the major industries, dairy farming in the Los Angeles area, water problems from 1914 to the present, and smog problems. Each group should decide how best to present its information. The group should be sure to discuss reasons for the growth of the industry or business.

31. After the group on the modern aircraft industry in Los Angeles has presented its information to the class, discuss the following questions: How has the development of this industry affected Los Angeles? Review the factors that led to the establishment of the industry in Los Angeles. Then ask: What other factors would be important today in deciding whether or not to expand the aircraft industry in Los Angeles or to move it elsewhere? Why?

32. After the group which has investigated the movie industry since the 1920's has presented its information, discuss the following questions: How has the industry affected the growth of Los Angeles? What effects did the invention and widespread use of television have upon the movie industry?

igate the major industries, water problems from 1914 ch group should decide how group should be sure to industry or business.	See group reports below for a beginning reference for most reports.
industry in Los Angeles lass, discuss the following this industry affected led to the establishment ask: What other factors hether or not to expand r to move it elsewhere?	Dederick, et. al., Your People and Mine, pp. 323-324.
the movie industry ormation, discuss the stry affected the growth invention and widespread industry?	Nat'l. Geog., Oct., 1962, pp. 494-496.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. New innovations and discoveries open up new fields of production.

G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

2. The airplane and movie indu
largely responsible for the
other industries in Souther

a. The electronics industry
support the aircraft ind
include television sets,
equipment and parts for
80,000.

b. The publicity given by th
in Hollywood has been res
California" garment indus
of the sportswear variety.
are located in downtown L
The apparel industry now

2. The airplane and movie industries have been largely responsible for the development of several other industries in Southern California.

   a. The electronics industry originally was established to support the aircraft industry, but now its products include television sets, industrial controls, x-ray equipment and parts for missiles. This industry employs 80,000.

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   b. The publicity given by the movies of clothing designed in Hollywood has been responsible for a "styled in California" garment industry. These have been largely of the sportswear variety. The garment manufacturers are located in downtown Los Angeles in upstairs locations. The apparel industry now employs 22,000 people.

33. Have those who have investigated the growing electronics and aerospace industries in Los Angeles present their information. Then discuss: Why was this a good area in which to develop such industries? How would its development affect Los Angeles?

Nat'l. Geog., Oct., 1962, pp. 496-501.

34. The committee which has investigated the clothing industry might present its information, perhaps through a bulletin board display showing advertisements of local stores of California made garments. The committee might also check clothes in their own home to find out how many California made garments their families own. They should be prepared to tell the class where the clothing industry is located in Los Angeles. How does its location compare with that in New York City? Ask: Why do you think this is true? Why was Los Angeles a good place for a clothing industry to develop? Why do you think it has specialized in sports clothes?

c. The petrole
It furnishes
planes. To
oil fields
today; there
Los Angeles

G. Today factories and other producers tend to locate close to the source of needed raw materials if these materials are perishable or heavier or bulkier than their finished product; factories tend to locate closer to their markets than to the source of needed materials if their products are heavier and bulkier than the raw materials and if their products are perishable.

d. A rubber in
to meet the

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

e. Kaiser Steel
produces ste

c. The petroleum and refining industry has continued to grow. It furnishes gas and oil to run the many autos and airplanes. Today this industry employs 21,000 persons. The oil fields are not able to supply the Los Angeles demand today; therefore, considerable oil must be brought into Los Angeles by tanker and pipe line.

d. A rubber industry and auto assembly plant have been developed to meet the need for automobiles in the area.

e. Kaiser Steel Company has a plant at Fontona which produces steel for the local industries.

35. Have the committee which has investigated the petroleum and refinery industries in Los Angeles and its surrounding area present its information, perhaps using illustrations to show the number of oil derricks in the built-up areas. Discuss: Why was Los Angeles a good place for developing oil refineries other than because of the oil fields? Why do you think Los Angeles must import oil today?

Morgan, Pacific States, p. 66 (for photos).

36. Have the group which has investigated the development of the rubber industry and auto assembly business in Los Angeles present its information. Then discuss: Why does it pay to ship auto parts to Los Angeles to assemble into cars rather than assembling them in Detroit? What other market would the rubber industry have in Los Angeles besides the auto industry?

37. Have pupils look at a map of coal and iron resources in the United States. Ask: Does Los Angeles seem a good place for a steel plant? Why or why not? Now have the group investigating the steel industry in the area present its information to the class. Why was the Kaiser Steel plant built at Fontona? What effect would the building of such a plant have upon Los Angeles?

G. The growth of factories and other industries in a town attract people, stores, etc., which in turn make the area more attractive to new factories and stores and also stimulate the growth of old ones.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. New innovations and discoveries open up new fields of production and/or increase production in older fields.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

D. Los Angeles still serves as
agricultural region.

1. Although citrus fruit gro
declined, citrus fruit gr
area. Scientists saved t
attacked the fruit in the

2. The most important dairy-
is found in the Los Angel
farms do not provide thei
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Valley and other places.

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D. Los Angeles still serves as a central place for an important agricultural region.

1. Although citrus fruit growing in the immediate area has declined, citrus fruit growers are still important in the area. Scientists saved the fruit growers after a virus attacked the fruit in the 1940's.

2. The most important dairy-producing area in the United States is found in the Los Angeles hinterland. However, the dairy farms do not provide their own feed; instead cows are kept in corrals and are fed with food imported from the Central Valley and other places.

38. Remind pupils of the numbers of citrus fruit orchards that were destroyed as Los Angeles and surrounding towns grew together and expanded. Ask: What would you expect to have happen to the citrus fruit growers as Los Angeles expanded? Where might they still grow fruit? Now read aloud the brief section in Morgan on the virus which affected citrus fruits in the 1940's and the way in which the orchards were saved.

39. Have the group which has been investigating the dairy industry in the Los Angeles area tell the class about their findings. Discuss: Why would farmers operate dairy herds where they cannot grow much feed for the cows? Why are these dairy farmers able to compete in the Los Angeles area with dairy farmers in other sections of the country who can grow their own food for their herds? How large would the dairy farms in this part

f citrus fruit orchards that
and surrounding towns grew
What would you expect to have
wers as Los Angeles expanded?
uit? Now read aloud the brief
which affected citrus fruits
hich the orchards were saved.

Morgan, Pacific States, p. 108.

investigating the dairy industry
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y who can grow their own food
ld the dairy farms in this part

Dederick, et. al., Your People and Mine, pp. 324-326.
Whittemore, et. al., The U.S., Canada, and Latin Am., pp. 126-127 (includes photograph).

G. Producers tend to locate closer to their markets than to the source of needed materials if their products are highly perishable.

S. Interprets map symbols in terms of the legend.

G. New innovations and discoveries open up new fields of production and/or increase production in older fields.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. The value of land tends to be related to a number of factors such as moisture, soil, temperature, and growing season, population density, and transportation facilities.

3. The Central Valle
land is used for
sugar beets, and

3. The Central Valley remains a rich, agricultural area; the land is used for garden vegetables, fruits, nuts, cotton, sugar beets, and livestock and poultry.

of the country have to be as compared with those in the Northwest or Northeast? Why? (Perhaps show a picture of a dairy farm in a dry area, with the corrals and storage elevators.)

40. Show the map of Farming in the Great Central Valley. Have pupils examine the key and then identify the types of agriculture used in different parts of the valley. Describe briefly some of the inventions which have been used in harvesting nuts and vegetable crops and in fighting frosts in Southern California. Also show the class pictures of some of the machines used in harvesting. Discuss: What do these inventions illustrate about the effects of both physical environment and man upon agriculture? What makes the land in this valley valuable'

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(Perhaps show a picture of
h the corrals and storage

Great Central Valley. Have
identify the types of
arts of the valley. Describe
which have been used in har-
s and in fighting frosts in
the class pictures of some
ing. Discuss: What do these
effects of both physical
lture? What makes the land

Morgan, Pacific States, p. 108 (map and description of inventions), pp. 116-117 (pictures).

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. The value of land tends to be related to a number of factors such as moisture, soil, temperature, and growing season, population density, and transportation facilities.

G. Man changes the character of the earth.

G. Power for industry may be obtained from the use of water.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. The greater the population density and the more complex the technological system, the greater the need for certain general governmental services such as roads, public health facilities,

E. Los Angeles has an importa

F. Los Angeles and Southern C
water problems.

1. The city needs drinking
while the agricultural

2. In 1930 the Colorado Ri
brings water to Los Ang
cities from the Parker

3. In 1940 Southern Califo
completion of the All-A
This canal draws upon t
This dam also provides
electrical power.

E. Los Angeles has an important fisheries industry.

F. Los Angeles and Southern California have continued to face water problems.

1. The city needs drinking water and water for factories, while the agricultural hinterland needs water for irrigation.
2. In 1930 the Colorado River Aqueduct was completed; it brings water to Los Angeles and other Southern California cities from the Parker Dam on the Colorado River.
3. In 1940 Southern California obtained more water by the completion of the All-American Canal to the Colorado River. This canal draws upon the water backed up by the Hoover Dam. This dam also provides Los Angeles with huge amounts of electrical power.

41. Have the pupils who have investigated the fishing industry in the Los Angeles area present its information to the class. Discuss: What effects would a fishing industry have upon Los Angeles? Has the physical environment been the only factor in the development of this industry? Why or why not? How are fish products used other than for food for human beings?

42. Ask: What does a city need water for in addition to the need for drinking supplies and for washing? Why would the need for water in Los Angeles keep increasing? Why would the need in the hinterland increase?

Have the committee which has investigated ways of meeting water shortages in the area present their information to the class. They should use a map showing diversion routes and sources of Los Angeles' water. They should also show a table of declining water levels in the area. In addition to discussing the Colorado River projects and the Feather River project, they should report on other scientific investigations which may help solve the water problems of the area.

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sent its information to the class.
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cal environment been the only
f this industry? Why or why not?
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Dederick, et. al., Your People and Mine, pp. 321-322.

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Morgan, Pacific States, pp. 59-61.
Saturday Review of Literature, Oct. 23, 1965, pp. 41-42.
Weaver, People Use the Earth, pp. 24-33.

public water supply, and institutions for making and enforcing laws.

G. Man changes the character of the earth.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. The greater the population density and the more complex the technological system, the greater the need for certain general

4. Recently, constr
   to bring water fr

5. Los Angeles is s
   the area have dr
   There is a dange
   close to the coa
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6. Scientists are t
   water problems o

   a. Improved de-sa
      to make extens
      present,costs

   b. Reuse of pollu
      it, may help m

G. In recent years Los

4. Recently, construction has begun on the Feather River Project to bring water from Northern California to Southern California.

5. Los Angeles is still concerned about water. Water tables in the area have dropped drastically from pumping operations. There is a danger of salt water seepage into the water tables close to the coast. Moreover, the demand for water is still growing.

6. Scientists are trying to develop new methods of meeting the water problems of the area.

   a. Improved de-salinization plants may make it possible to make extensive use of sea water in the future; at present, costs of desalinized water are very high.

   b. Reuse of polluted water, through new methods of cleansing it, may help meet future demands.

G. In recent years Los Angeles has faced a serious smog problem.

43. Have the committee which has investigated the smog problem in Los Angeles present its information. They should use a diagram to illustrate the inversion problem in the Los Angeles area and its effect upon air over Los Angeles. It should also discuss the sources of air pollution, its effects (illustrated with pictures), and ways in which Los Angeles is trying to solve the air pollution problem. Discuss air pollution as another way in which man has modified his physical environment. Ask: What other ways can you suggest for solving the problem?

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information. They should use a
nversion problem in the Los Angeles
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air pollution, its effects
, and ways in which Los Angeles is
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ner ways can you suggest for solving

Time, Jan. 27, 1967, front cover (picture) and article on pp. 48-52.

Morgan, *Pacific States*, p. 30.

governmental services such as roads, public health facilities, public water supply, and institutions for making and enforcing laws.

G. The significance of location depends upon cultural developments both within and outside a country or region.

G. People in most societies of the world depend upon people who live in other communities for certain goods and services and for markets for their goods.

G. Specialization makes for interdependence.

S. Applies previously-learned concepts and generalizations to new data.

G. Cities which become big trading centers tend to grow up where there is a break in transportation and so where goods must be moved from one type of transportation to another or from one company's transportation facilities to those of another company.

H. Los Angeles is now connected wi
by all types of transportation.

H. Los Angeles is now connected with the other parts of the world by all types of transportation.

44. Have a pupil prepare a chart or bulletin board display of products imported into Los Angeles and those shipped out through its port. Ask: How can you explain these lists? How else do you think goods are moved in and out of Los Angeles? Have pupils examine different types of transportation maps to decide how important the city is as a hub of transportation. Ask: Why do you think so many highways were built to the city and so many airlines have flights to the city?

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Why do you think so many
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Whittemore, et. al., The U.S., Canada, and Latin America, pp. 132-133.

Maps of highways, railroads, and airlines.

S. Generalizes from data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Draws inferences from a comparison of different map patterns of the same area.

S. Applies previously-learned concepts and generalizations to new data.

S. Interprets map symbols in terms of the legend.

. Interprets map symbols.

S. Generalizes from data.

S. Generalizes from data.

VI. Conclusions: We have s
Los Angeles change from
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VII. The southern Pacific co
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VI. Conclusions: We have seen the utilization of the site of Los Angeles change from entirely agricultural to almost entirely residential and industrial within the space of one hundred years. Although the change has been dramatic,it would be impossible to understand much of what we see in the present city without understanding the legacy of the past.

VII. The southern Pacific coast region of the United States is characterized by: a Mediterranean climate; a series of valleys between mountains; high population densities and large cities; important ports; a high degree of industrialization; and irrigation agriculture, with an emphasis upon vegetables, fruits and dairying;and important forestry and fishing industries.

45. Culminating activity. Have pupils make a list on the chalk board of all the factors which have helped Los Angeles grow to its present size. Once the list is fairly complete ask: Which factors were most responsible? Most geography books like to point to climate as the most important factor. However, continue the discussion until pupils see that climate did not determine that such a city should be built. Los Angeles is the result of many men with many ideas utilizing not only the climate, but all other resources to the fulfillment of their needs.

46. Have pupils examine a series of maps of California once more to notice how the Los Angeles area compares with other parts of California in terms of climate, physical relief, population densities, and land use. Ask: What differences do you note between Los Angeles and each of these other parts of California? Can you think of any reasons why they might exist? Can you think of any reasons for some ot the similarities?

47. Have pupils examine a map of California cnce more. What do they notice about the concentration of population? Divide the class into groups to investigate other important cities in California. Why might the population be concentrated in these areas? They should try to decide why people settled there and what factors have led to its growth. They should also compare it with Los Angeles. In what ways is it similar to Los Angeles? In what ways does it differ?

48. Pupils should identify the characteristics of the Southern Coastal Region and fill in the column after that in the regional chart which they began during the unit on the Midwest.

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Physical, rainfall, temperature, population, and land use maps of California or the United States.

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Population density map of California or (dot population density map of the U. S.).

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TEACHING THE GEOGRAPHY OF LOS ANGELES

by

Edwin L. Groenhoff

In the development of our general theme, "How man deals with his environment," we have looked at some broad physical and cultural patterns found in the United States and as a further development of our theme we are now engaged in a study of how man has dealt with his environment at certain selected locations. To help understand the dynamic, changing quality of man's interaction with his environment it is necessary to add a historical perspective, so we look at these selected locations at selected points in time and then attempt to make some generalizations on the basis of the differences which we may find.

The geographic concepts which will be emphasized in these case studies are: site, situation, interrelatedness, and change.[1]

As the teacher begins the study of each of these cities, use should be made of a good physical map. In the case of Los Angeles, a raised relief map will be of real help. Let the students imagine that they are on a boat sailing along the western coast of the United States from Seattle, Washing
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[1] For a complete discussion of these geographic concepts the teacher is referred to the Project Paper, The Study of Geography, by Frederic Steinhauser.

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Seattle, Washington toward the South. Let them describe what they would see (using the physical map) along the coast line. They will discover that at a certain point the coast line makes an abrupt turn to the East and at this point they would see a large coastal plain spread before them. Upon closer examination they would find that there are many narrow gaps in the surrounding mountains which lead to several adjoining lowlands. It might be convenient at this point to name these lowlands: the coastal plain, the San Fernando Valley, the San Gabriel Valley, Valley of the South, and San Jacinto Basin.

Drawing upon the information which the students now know about the climatic patterns of the United States let them describe what kind of climate they would expect to find in these coastal lowlands. They will probably mention mild climate and will call it either wet or dry according to when they or their relatives may have visited the region. A little discussion may bring out that those who think it is wet visted there in the winter. You can then point out that the unique feature of the climate of this area is that the rainfall is greatest in the coolest months of the year. This type of climate is called Mediterranean. The following rainfall and temperature chart will help explain this feature.

TEMPERATURE AND PRECIPITATION FOR LOS ANGELES

	J	F	M	A	M	J	J	A	S	O	N	D	Average
T	56.6	55.5	57.5	59.4	62.2	66.4	70.2	71.1	69.0	65.3	60.9	56.6	62.4
RF	3.1	3.1	2.8	3.0	.4	1.	.0	.0	.2	.7	1.2	2.6	15.2

I. LOS ANGELES, A SPANISH SETTLEMENT IN 1800

If we were to visit the coastal lowlands about 1800 we would find a small village (called a Pueblo) of about 300 residents. This village had been founded a few years before (1781) with the impressive name, "el Pueblo de Nuestra Senora La Renia de Los Angeles," which means the Town of our Lady of the Queen of the Angeles. It was located on the terrace of the Los Angeles river which would afford protection from the winter floods, but could be irrigated by means of a ditch whose intake was farther upstream.[2]

A short distance from the Pueblo was the Mission of San Gabriel which by 1800 had become a very successful mission. Citrus groves surrounded the mission buildings and long-horn cattle grazed on the surrounding grassland. It was because of the success of this mission that the governor of California, Philipe de Neve, decided to found a Pueblo nearby to raise supplies for the Spanish troops

stationed in Cali

Walking down
Angeles in 1800 o
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[2] Davis Landis, California: Land of Contrasts, (Wadsworth Publishing Company, Inc., Belmont, Calif., 1963), p. 184.

[3] A much more
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FOR LOS ANGELES

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Land of Contrasts,
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stationed in California.

Walking down the streets of the Pueblo of Los Angeles in 1800 one could hear Spanish spoken almost entirely. Here and there one would see Indians and if one were to visit the Mission of San Gabriel Indians could be seen working in the vineyards and groves. These Indians were already inhabiting the coastal lowlands when the Spanish arrived in 1769. When they came, and where they came from we do not know.[3]

On the grasslands surrounding the new Pueblo we would see cattle grazing on large tracts of land known as ranches. By 1800 there were at least five of these in the Los Angeles area, all operated by retired soldiers who desired to remain in the area rather than return to Mexico or Spain.

It should be pointed out that the site on which the Pueblo was built had no harbor, and no navigable waterway. It might be interesting to speculate what might have happened if the English or Dutch who were interested in sea commerce had come into this area before the Spanish. The Spanish needed water for irrigation, good soil, and a favorable climate for growing agricultural crops. This they found in the coastal lowland, but not on the coast.

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[3] A much more complete discussion of pre-Spanish cultures of Southern Calif. can be found in a supplement of the Annals of the Association of American Geographers, Vol. 49, No. 3, Part 2, which is devoted entirely to a symposium on Southern Calif. Extensive use of this supplement has been made in this paper.

II. LOS ANGELES UNDER THE INFLUENCE OF AMERICANS AND GOLD

By 1850 it would have been almost impossible to recognize Los Angeles as the same town visited in 1800. One could still see Spanish architecture and still hear Spanish spoken in many homes and shops, but almost overnight new voices and new languages had come into the sleepy Pueblo and they were all talking about one thing--gold.

Many things had happened in the previous four years. In 1846[4] American troops had entered San Pedro Bay and had raised the stars and stripes over the area. Two years later (1848) news had reached Los Angeles of a gold discovery to the north. There had been an immediate exodus of people, but by 1850 many had already returned. Some of them returned because they became discouraged in their search for gold, but others came back to raise food because the thousands of miners who had poured into the state needed food, and as a result the price of agricultural products, especially beef, had risen sharply. The census of 1850 showed the population of the city to be 1,610.[5]

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[4] Under President James Polk, American troops invaded Mexico, July 7, 1846 and Commodore John Drake Sloath seized Monterrey and claimed California for the United States soon after.

[5] Los Angeles had been assigned the status of Ciudad (city) in 1835.

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[7] Annals of the Ass
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Many accounts of Los Angeles in 1850 resemble boom cattle towns on the great plains. Many stores, hotels, and saloons were quickly built. Law and order was not able to keep pace with the increased population and men protected themselves by carrying a pistol and a knife.

This would be an ideal time for the teacher to review the concept "situation." While the site remained unchanged, man's occupance of the site changed drastically because of a change in situation. The discovery of gold many miles to the North changed man's use of his environment in the Los Angeles lowlands.

The new market for agricultural products caused many more men to begin farming in earnest. Irrigation ditches were extended to serve many areas of citrus fruits and gardens vegetables while ranches for the production of cattle increased to more than 70. Nadeau[6] refers to this era as the first land boom in California.

H.E. Raup in "Transformation of Southern California to a Cultivated Landscape,"[7] lists the following social and natural factors as having contributed to the advancement of irrigation in Southern California.

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[6] Remi Nadeau, Los Angeles, From Mission to Modern City, (Longmans, Green and Co., New York, 1960), p. 13. Much of the early history of Los Angeles for this paper was taken from this excellent book.

[7] Annals of the Association of American Geographers, Vol. 49, No. 3, Part 2, p. 65.

1833--Secularization of all Mission property.
1848--Gold discovered followed by the Gold Rush.
1857--First cooperative agricultural society (Anaheim was established by a group of German settlers).
1862--Draught--many cattle died and the grazing economy collapsed.

So by 1850 a trend had started which was to continue until the coastal lowlands and all the adjoining lowlands were covered by citrus groves and vegetable gardens. Here and there throughout these groves settlements were started to serve the thousands of new settlers.

III. LOS ANGELES AT MID-TWENTIETH CENTURY

By the middle of the twentieth century the citrus groves were fast disappearing. Citrus plantings in the Los Angeles Metropolitan area decreased by 43,880 acres in the 1945-55 period.[8] The 1950 census listed Los Angeles county as the leading agricultural county in the nation according to value of produce sold, but by 1954 it had dropped to third place. While there has been a decline in citrus field crops, this has largely been offset by increases in sales of dairy and poultry products. A map of the Los Angeles

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[8] Ibid, p. 80.

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Metropolitan area will reveal such town names as Dairy Valley, Dairyland, Dairy City, etc. These are all high density dairy farms within the metropolitan area providing milk to the urban population. Feed for these cattle must be transported from other areas such as the Imperial Valley.

Rather than suburbanization taking place contiguous with the central core area as has happened in many metropolitan centers, farm villages in the surrounding valleys have reached out through residential growth along modern highways to embrace the mother city. Gordon Gregor has called Los Angeles "A collection of suburbia looking for a city."[9] If the teacher can locate a fairly recent detailed map of the Los Angeles Metropolitan area he should help the students locate some of the many core areas which were once farm villages.

The many overlapping administrative units which have developed because of this type of growth is demonstrated in the following letter to the editor of the Los Angeles Times.

> Mail, Torrance Post Office; gas, Compton; water from Dominques; power, Long Beach; house in Keystone; listed in telephone book as Wilmington; pay property taxes in Los Angeles county, but half a block down the street is the school which is called Los

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[9] Gordon F. Gregor, "Spacial Disharmonies in California Population Growth," Geographic Review, Vol. LIII, No. 1, (Jan. 1963), p. 117.

Angeles in which we pay school tax.[10]

This growth pattern has resulted in a rather low density, decentralized urban area. Although approximately seven million people occupy the metropolitan area[11] (increasing on the average of 263,000 per year) the number of people per square mile is still lower than other major cities. In Los Angeles it is only 4,400 per sq. mi. Chicago has four times as many and New York six times as many. If Los Angeles had the density of New York City it would have a population of 40,000,000. Outside the central core area the density is 2,500.[12]

The low density is reflected in larger than average lots, and also more single family dwellings. In Los Angeles 63.8 per cent of the dwelling units are single family houses, while in Chicago the figure is 28.4.[13]

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[10] Quoted in Edwin A. Cottrell and Helen L. Jones, Metropolitan Los Angeles, Vol. 1, Characteristics of the Metropolis, (The Hayes Foundation, Los Angeles, 1952), p. 47.

[11] A distinction has been made through this paper between the city of Los Angeles and the Los Angeles Metropolitan area. The latter generally covers the counties of Los Angeles and Orange.

[12] Cottrell and Jones, op. cit., p. 48.

[13] Gordon F. Gregor, Geographical Review, op. cit., p. 117.

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The urban skyline is low and the Central Business District is small. There is a 150 foot limitation on building height. This limitation is largely due to the possibility of earthquakes. A modern system of freeways brings people to the CBD to work. There are few first-class hotels, night clubs, theaters, and restaurants in the CBD, yet the total Los Angeles Metropolitan area contains more hotels, motels, and service stations than any other city including New York.[14]

We have already mentioned that the original site of Los Angeles did not contain a harbor. You have already talked with your students about the reason for this--the Spanish were not interested in trade, but in establishing an agricultural community. Now you have an excellent oportunity to point out what happens when other men with other ideas occupy the same site. The Americans who came were interested in trade and were especially interested in bringing people to Southern California to buy land and live, so it was necessary to connect this isolated Spanish settlement with the rest of the world. Twenty-one miles to the South of Los Angeles is the harbor of San Pedro. Soon after the Americans came a stage route was established between Los Angeles and the San Pedro Harbor and in 1869 a rail line replaced the stages. The Southern Pacific and the Santa Fe both connected Los Angeles with the remainder of the nation before 1900.[15] Hopefully your students will see the connection between these transportation routes and the major industries which we will discuss next.

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[14] Landeau, op. cit., p. 194.

[15] Nadeau, op. cit., presents some interesting accounts of the power struggle between the competing railroads.

One industry which should be discussed is the aircraft. The Douglas corporation employs approximately 60,000 people and the Lockhead plant at Burbank about 32,000. At the present time about one-third of the labor force is employed in the aircraft industry.[16] Ask the students to list some reasons why this area might have become a center for aircraft manufacturing. No doubt the days of good flying weather and the possibility of working outdoors helped bring the industry here, but the labor reserve and the presence of other related industries (such as electronic) is a force in maintaining its high production level.

Most of your students will be able to tell you something about Hollywood. The movie industry had its beginnings in 1909 when the Selig firm moved to Elendale. The abundance of sunshine for outdoor pictures and the varied scenery drew a number of companies during the 1920's. It is probably the only major industry of Los Angeles

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[16] Landis, op. cit., p. 188. The following table of employment of various industries is given.

Aircraft	161,000
Electronics	80,000
Motion Pictures and Television	22,000
Petroleum and refining	21,000
Apparel	22,000

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which continued to grow throughout the world, but the home base for most of the major companies is still in Hollywood.

An industry which is closely related to that of the motion picture is the apparel industry. The publicity given California and Hollywood styles by the motion picture has created a market for "styled in California" clothing. This has been generally of the outdoor and sportswear variety. The focal point of clothing manufacturing is similar to New York City in that it is downtown, second floor location. The congestion, however, is not as great as that of the New York garment area.

Near the city of Los Angeles one can see oil wells in operation and also a number of refineries. Oil was first discovered about 1900 near the present corner of Second Street and Glendale Boulevard. Petroleum and refining still employs 21,00 persons in the Metropolitan area.[17]

An electronics industry which started as a supporting industry to the aircraft during the war has now expanded to include radio and television sets, industrial controls, X-ray apparatus and recently has been involved in supplying parts to our space program.

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[17] Annals of the Association of American Geographers. Vol. 49, No. 3, Part 2, p. 80. Many of the facts concerning industry were taken from the section of this supplement by Harward J. Nelson, "The Spread of an Artificial Landscape over Southern California."

A rubber industry has grown up in Southern California to supply the many vehicles that are produced and operated in the area. Akron, Ohio is the only city that has surpassed Los Angeles in the population of rubber. Associated with this is the automobile assembly plants. At the present time there are six plants operating and employing about 7,000 people.

With the rise of industry it was almost certain that a steel industry would come into existence. At the present time one large mill, Kaiser Steel Company's Fontona plant, produces steel for the domestic market. This plant must go 164 miles to Eagle Mountain for its iron ore, 800 miles to Sunnyside, Utah, for its coal and 76 miles to Cusherbury for its limestone.[18]

People and industry need water, and the search for water by the Los Angeles Metropolitan area makes excellent material for a teacher to use in pointing out the relationship of man to natural resources. The concept of interrelatedness can be illustrated by the relationship of Los Angeles to its several water sources.

By the turn of the century the city water superintendent was already looking for ways of increasing the water supply. The first major link was made to the Owens Valley, 259 miles away, in 1913. This link helped convert the San Fernando

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[18] Annals of the Association of American Geographers, Vol. 49, No. 3, p. 84.

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Valley from grazing to truck gardening. Since this was a Los Angeles sponsored project, many outlying villages joined the city of Los Angeles to be assured of a water supply. By 1927 a new water shortage developed and the Colorado Aqueduct was begun to link the water of the Colorado River with Los Angeles.

Following are some generalizations which may be drawn from our study of Los Angeles:

1. Man deals with his environment at a particular place on the basis of its natural resources in combination with the ideas and needs which he brings with him to the site.
2. Discoveries of new resources in surrounding areas represents a change in "situation" which effects man's use of his environment at a particular site.
3. Change in man's use of a site can be a reflection of: different cultures occupying the site, the discovery and use of new natural resources either at the site or in the surrounding region, new technological discoveries, or the construction of new transportation routes which connect the site with other parts of the world.
4. Change is never abrupt and complete, but is over a period of time; and reflections of the past can always be seen in the present.

Other Sources of Information:

1. If it can be obtained, an excellent little pamphlet was published by the Security Trust and Savings Bank in Los Angeles in 1928 entitled El Pueblo Los Angeles before the Railroads. This contains many eyewitness accounts of early days.

2. A history of Wilshire Blvd., but really a history of Los Angeles is: Fabulous Boulevard by Ralph Nancock (Funk and Wagnalls Company, New York, 1949), 322 pp.

3. Magazines which contain articles on Los Angeles:
   Senior Scholastic for November 15, 1963.
   Business Week for March 14, 1964.
   American Forests for February 1964.
   Science Digest for May 1963.
   Aviation for July 1963.

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Grade: Five
Unit: The West
5 Sub-Unit C: Case Study on Seattle and the Northern Pacific Coastal Region

RESOURCE UNIT 5/3

These materials were developed by the Project Social Studies Curriculum Center of the University of Minnesota under a special contract with the Cooperative Research Division of the United States Office of Education. (Project HS-045).

OBJECTIVE

This unit should make progress toward developing

GENERALIZATIONS

1. Every place has three types of location: a position, a site and a situation.
    a. Location is a position which sets a phenomenon at a specific point on the earth's surface, usually designated by an abstract grid and described in terms of latitude and longitude.
    b. Site relates a phenomenon to the detailed physical setting of the area it occupies.
    c. Situation describes a phenomenon in areal relationship with other phenomena with which it is associated.
2. Temperature is affected by such factors as distance from the equator, elevation, distance from warm water bodies, prevailing winds and physical features which block winds from certain directions.
3. Precipitation is affected by factors such as distance from bodies of warm water, wind direction, temperature, ocean currents, and physical features which force winds to rise.

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OBJECTIVES

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a. Warm air can hold more water than cool air; therefore warm air picks up moisture and the cooling of air leads to precipitation.

  1) Winds which have been warmed and have picked up moisture crossing large bodies of warm water tend to cool as they rise over mountains and so drop their water on the side of the mountains from which they come.

  2) As winds descend into valleys from mountain ridges, they are warmed and tend to pick up moisture.

4. Vegetation is affected by temperature, precipitation, and soil.

5. Soil in a particular place is affected by the type of basic rock in the region; the climate; vegetation; erosion; wind, glaciers and rivers which move soil; and by how man treats the soil.

6. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

   a. The significance of location depends upon cultural developments both within and outside of a country or region.

1) A change in situation brings about a corresponding change in the use of a site.

b. Types of agriculture in a region depend upon man's cultural values, perceptions, and technology as well as upon climate, soils, and topography.

c. A number of factors -- climate, surface features, natural resources, accessibility, and history -- affect settlement and growth patterns.

d. Man changes the character of the earth.

7. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

a. Power for industry may be obtained from the use of water power to produce electricity.

b. Forests can be used to obtain lumber and other timber products such as paper, turpentine, nuts, etc., depending upon the kinds of trees in the forest.

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   c. Factories need good transportation facilities, but large cities with many factories and large numbers of people also attract improved transportation facilities.

   d. The growth of factories in a town attract people, stores, etc., which in turn make the area more attractive to new factories and also stimulate the growth of old ones.

8. Certain physical features of a site are more desirable than others for the development of a port city.

9. Cities need means of shipping goods in and out; they are likely to grow up where transportation is good, particularly where different types of transportation meet.

   a. Cities which become big trading centers tend to grow up where there is a break in transportation and so where goods must be moved from one type of transportation to another or from one company's transportation facilities to those of another company.

   b. Improved transportation facilities make possible wider and bigger markets for goods as well as greater and less costly access to resources.

10. The people of the world are interdependent.

a. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

b. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

c. Specialization of regions makes for interdependence.

d. Central places may provide some functions for their hinterland, some for their state and region, and some for the country as a whole.

1) Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

11. A region is an area of one or more homogeneous features. The core area is highly homogeneous, but there are transitional zones where boundaries are drawn between different regions.

a. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena and some on the

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12. Although culture is always changing, certain parts or elements may persist over long periods of time.

13. Innovations may come about as a result of diffusion or borrowing from other people.

    a. When people are in direct contact with one another, they tend to borrow cultural traits.

    b. When people migrate from one place to another, they take their culture with them.

SKILLS

The broad skill toward which teaching is aimed is underlined. The more specific skills taught in the unit, or the understandings needed to learn the skill, are not underlined.

1. Attacks problems in a rational manner.

    a. Sets up hypotheses.

2. Is effective in gathering information.

    a. Gains information by studying pictures.

    b. Interprets graphs.

    c. Interprets tables.

3. Uses effective geographic skills.
   a. Identifies directions on map.
   b. Uses scale to determine distances.
   c. Compares distances.
   d. Interprets map symbols in terms of map legend.
      1) Interprets map symbols (contour lines).
   e. Draws inferences from a comparison of different map patterns of the same area.
   f. Draws inferences from maps by applying previously-learned generalizations.
   g. Uses atlas index to locate places.
   h. Develops a system of regions to fit a particular purpose.
4. Evaluates information.
   a. Evaluates sources of information in terms of competency of authors.
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5. Organizes information and draws conclusions.
   - a. Tests hypotheses against data.
   - b. Generalizes from data.

OBJECTIVES

A. IS CURIOUS ABOUT SOCIAL DATA.

G. Every place has three types of location: a position, a site, and a location.

G. Location is a position which sets a pheonomenon at a specific point on the earth's surface, usually designated by an abstract grid and described in terms of latitude and longitude.

S. Uses atlas index to locate places.

S. Identifies directions on map.

G. Situation describes a phenomenon in areal relationship with other phenomena with which it is associated.

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OUTLINE OF CONTENT

I. Seattle is located in northern United States on Puget Sound on an excellent harbor and in an area of cool summers, warm winters, and fairly heavy rainfall.

A. Seattle is located at about 48 degrees north latitude and about 122 degrees west longitude.

TEACHING PROCEDURES

1. Prepare a bulletin board showing several pictures of Seattle
day. Leave room to add a large-scale map of the Seattle area

2. Ask pupils how many of them have ever visited Seattle. If so
what do they remember about it? Some of them may be able to
bring to class photographs, cards, maps, or guides collected
their parents on visits such as visits to the World Fair seve
years ago. If pupils have not visited Seattle, ask them if t
think they know anything about the city. Make a list of thei
ideas and tell them they should try to find out during the un
how accurate their ideas are.

3. Have a pupil look up Seattle in an atlas index, and write its
cation (latitude and longitude) on the chalkboard. Have anot
pupil locate Seattle on a wall map using this location data. H
still a third pupil locate Seattle on a globe.

4. Ask: In what direction is Seattle from our home town? How d
you know? In what direction is it from New York? from Birmin
ham? From Los Angeles?

Ask: In what region of the U.S. is Seattle? (Review regions
veloped in Overview unit, activity #96.)

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Seattle from our home town? How do
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U.S. is Seattle? (Review regions de-
ctivity #96.)

MATERIALS

e.g. *A Picture Book of Scenic Seattle*; *Seattle and Puget Sound*; Postcard set, *Greetings from Scenic Seattle*.

Atlas
Physical-political map of U.S.
Globe

S. Uses scale to determine distances.

S. Compares distances.

S. Sets up hypotheses.

G. Situation describes a phenomenon in areal relationship with other phenomena with which it is associated.

G. Site relates a phenomenon to the detailed physical setting of the area it occupies.

S. Interprets map symbols.

S. Sets up hypotheses.

Understands concept of "sound" as it is used in geography.

G. Certain physical features of site are more desirable than others for the development of a port city.

S. Sets up hypotheses and checks against data.

G. Temperature is affected by such factors as distance from the equator, elevation, distance from warm water bodies, prevailing winds, and physical features

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B. Seattle is a long distance from the Middle West and Eastern U.S. but it is closer to the Far East and to Alaska than any of the other major ports on the Pacific coast; this gives it an advantage in trade with these two places.

C. Seattle is located on Puget Sound.

1. Seattle is between mountain ranges which not only shelter it but also provide good recreational possibilities.

2. It has an excellent harbor, with a lake just to the east of it.

3. Seattle is close to the ocean and is warm in winter and cool in summer.

5. Have a pupil use a globe and a string to measure distanc
his home town to Seattle and to other places studied in
thus far. He should make a bar graph to compare these d
He should also indicate within the bar the number of mil
imately) represented by each bar. Refer pupil to a table
scales if no scale is identified on the globe.

Now have a pupil use a globe and a string to measure dis
Seattle, Los Angeles, and San Francisco to Japan and Chi
should make a bar graph to compare these distances. Dis
city would have an advantage over the other two in trade
Orient? Why? Let pupils set up hypotheses to test late

6. Have pupils examine a large scale map of Washington and a
larger scale map of Seattle and its environs. What do t
about the elevation of Seattle? about what the landscape
like? about physical features surrounding Seattle?

Project pictures of some of important mountains and moun
shown on map. Project pictures of Puget Sound and of La
ton and of the hills of Seattle to help pupils visualize
on the maps. Ask: What effect do you think these mounta
have upon Seattle? (Set up hypotheses for testing.)

Ask: What advantages do you think Seattle's situation o
Sound would give it? (Set up hypotheses to test later.)
pupils look up figures on the length and depth of Puget S
their "Classroom Almanac."

7. Ask: What do you remember from the Overview about the te
of this area? (Point to Puget Sound area.) If pupils re
something about the temperature, review reasons why the S
gion would be warmer in winter and cooler in summer than
Red River Valley area which they have already studied.

and a string to measure distances from
and to other places studied in the U.S.
a bar graph to compare these distances.
ithin the bar the number of miles (approx-
ach bar. Refer pupil to a table on globe
entified on the globe.

obe and a string to measure distances from
San Francisco to Japan and China. He
o compare these distances. Discuss: Which
age over the other two in trade with the
set up hypotheses to test later.

ge scale map of Washington and an even
le and its environs. What do they note
attle? about what the landscape looks
tures surrounding Seattle?

of important mountains and mountain ranges
ctures of Puget Sound and of Lake Washing-
eattle to help pupils visualize symbols
effect do you think these mountains might
up hypotheses for testing.)

you think Seattle's situation on Puget
t up hypotheses to test later.) Have
the length and depth of Puget Sound in
'

r from the Overview about the temperature
Puget Sound area.) If pupils remember
rature, review reasons why the Seattle re-
inter and cooler in summer than would the
ch they have already studied.

Globe and string.
Table on globe
scales in Center's
"Classroom Almanac."

Large scale maps of
Washington and Seattle.

A Souvenir Picture Book of Scenic Washington; Seattle and Puget Sound. Slide set Ranier National Park; Seattle From the Air.
Binns, Northwest Gateway, pp. 9-11, 16-20.
"Student Almanac."

Physical-political
map of U.S.
"Classroom almanac."
Map of Jan. and July
temperatures in U.S.
See Deasy et.al.,
The World's Nations,
p. 30.

which block winds from certain directions.

S. Draws inferences from maps by applying previously-learned generalizations.

S. Sets up hypotheses and tests against data.

G. Rainfall is affected by distance from bodies of warm water, wind direction, temperature, and physical features which block winds carrying moisture.

G. Warm air can hold more water than cool air; therefore warm air picks up moisture and the cooling of air leads to precipitation.

G. Winds which have been warmed and have picked up moisture crossing large bodies of warm water tend to cool as they rise over mountains and so drop their water on the side of the mountains from which they come.

G. As winds descend into valleys from mountain ridges, they are warmed and tend to pick up moisture.

4. Seattle gets considerable precipitation.

If pupils cannot remember much from the Overview about the
ture in the Seattle region, ask: Given Seattle's latitude,
would you expect its temperature to be like? What other fa
might affect its temperature? Would you expect Seattle or
River Valley to be colder in winter? warmer in summer? Wh
pupils set up hypotheses and test them against temperature
tables in their classroom almanac.

8. Ask: What effect would Seattle's location have upon rainfa
the area? If pupils do not remember from the Overview, hav
set up hypotheses about probable rainfall and decide how to
Then use rainfall maps and charts to check hypotheses. Now
what pupils think rainfall pattern would be like on the oth
of the Cascades. Check in same way.

h from the Overview about the tempera-
sk: Given Seattle's latitude, what
ure to be like? What other factors
? Would you expect Seattle or the Red
winter? warmer in summer? Why? Have
test them against temperature maps or
anac.

le's location have upon rainfall in
emember from the Overview, have them
ble rainfall and decide how to test.
arts to check hypotheses. Now ask
ttern would be like on the other side
me way.

Rainfall map of U.S. (For example see plate 13 in Informative Classroom Picture Set on The South; Glendinning, et.al., Your Country and the World, p. 45; Whittemore, et.al., U.S., Canada, L. Am., p. 42.)
"Student Almanac."

S. Interprets map symbols.

S. Sets up hypotheses.

G. Vegetation is affected by temperature, precipitation, and soil.

5. Seattle
vegetat
with mu
cades
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S. Interprets map symbols in terms of map legend.

G. Vegetation is affected by temperature, precipitation, and soil.

5. Seattle is in an area in which the natural vegetation consisted of coniferous forests with much Douglas Fir. East of the Cascades is an area of grasslands and desert vegetation.

9. Project a map showing forest areas of U.S. and hav key to decide what kind of forests would be found pecially close to Seattle. Ask: Why do you think dense forests in these areas?

Then show pictures of some of major forest areas in of types of trees. Point out that when white men they found such forests spread even more widely ov Would this have been an advantage or a disadvantag settlers? Why? What possible advantages might su in addition to lumber today? Let pupils set up hy during reading.

10. Now have pupils examine a map of natural vegetatio United States or of Washington State. Have pupils areas of grasslands and desert region. Ask: How the differences in type of vegetation here and alo

forest areas of U.S. and have pupils use the of forests would be found n Washington, es- le. Ask: Why do you think there are such areas?

ome of major forest areas in Washington and int out that when white men first arrived, s spread even more widely over the area. Ask: n advantage or a disadvantage to these early ossible advantages might such forests have today? Let pupils set up hypotheses to test

Map of forests in U.S. or Washington. (e.g. Finch et.al., The Earth and Its Resources, p. 404; Informative Classroom Pictures Set on The Midwest, p.7; Saveland and Glendinning, World Resources, Western Hemisphere, p. 25.

Photos of Washington Forests and of Douglas fir and other trees of area. (e.g. See McCormick, Jack, The Life of the Forest, 144, 158, 162-166; Park and Revis, "Washington Wilderness, the North Cascades," National Geographic, Mch., 1961, pp. 335-367; Manning, The Wild Cascades; Borchert and McGuigan, Geography of the New World, p. 285. Whittemore et.al., U.S., Canada, pp. 151, 153.

a map of natural vegetation in western shington State. Have pupils examine the desert region. Ask: How can you explain of vegetation here and along the coast?

Vegetation maps. (See Deasy, et.al., The World's Nations, p. 128; Saveland and Glendinning, World Resources, Western Hemisphere, p. 25.)

G. Vegetation is affected by temperature, precipitation, and soil.

S. Interprets map symbols in terms of map legend.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Soil in a particular place is affected by the type of basic rock in the region, the climate, vegetation, erosion; wind, glaciers and rivers which move soil; and by how man treats the soil.

S. Sets up hypotheses.

6. The soils eas
prairie soils
productive un
to Seattle ar
by vegetation
action, and t
erosion.

6. The soils east of the Cascades are rich prairie soils or desert soils which can be productive under irrigation; the soils close to Seattle are complex soils affected by vegetation (coniferous forests), glacial action, and the movement of soils by water erosion.

11. Perhaps use photos of different parts of Washington and pick out part of Washington in which this photo was prob (They should consider such features as type of vegetatio signs of moisture, landforms, etc.) Then check pupil's gainst actual location of photos.

12. With the map of vegetation still in front of them, have to figure out what kinds of soil might be found in the c parts of Washington. Then show an enlarged map of soil Washington. (If necessary make it by projecting a soils the United States with an opaque projector.) Have pupil the legend to figure out what the symbols stand for. Th them check their guesses about soil in the state and par in the Seattle area. How good do they think such soil for growing crops? Let pupils set up hypotheses to test read during the unit.

    Also say: You have now looked at temperature, rainfall, tion, soils, and surface relief in the state of Washingt pose you were a farmer living close to Seattle. What ki crops do you think you might try to grow? What other pr might you try to grow? Why? Now suppose you were a far east of the Cascades. What kinds of crops do you think try to grow? What other kinds of products might you try Why? (Let pupils make guesses and tell them they can ch guesses later against what is actually grown in the area

13. Say: You have now studied the physical environment of t area. From what you now know, what predictions can you the city of Seattle today? (Let pupils make predictions them for checking at the end of the last part of the uni

nt parts of Washington and have pupils
n which this photo was probably taken.
atures as type of vegetation and other
etc.) Then check pupil's guesses a-
tos.

ill in front of them, have pupils try
oil might be found in the different
ow an enlarged map of soil types in
ke it by projecting a soils map of
que projector.) Have pupils study
the symbols stand for. Then have
t soil in the state and particularly
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d at temperature, rainfall, vegeta-
ef in the state of Washington. Sup-
close to Seattle. What kinds of
try to grow? What other products
Now suppose you were a farmer living
inds of crops do you think you might
ds of products might you try to raise?
s and tell them they can check their
actually grown in the area.)

e physical environment of the Seattle
v, what predictions can you make about
(Let pupils make predictions, and save
of the last part of the unit.)

See some of photos in books listed in activity 9. Also see Borchert and McGuigan, Geog. of the New World, pp. 315, 282.

Scenic Washington.

For map of natural vegetation see activity 10 above.
For map of soils of Pacific Coastal area, see Deasy et.al., The Worlds Nations, p.44; Glendinning, et. al., Your Country and the World, p. 49.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

S. Sets up hypotheses.

S. Tests hypotheses against data.

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II. We look at the site of Seattle in 1792 when Vancouver visited and explored Puget Sound. At that time the area was inhabited by Indians who lived by fishing, hunting, and digging clams.

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III. We look at Seattle in 1853.

A. Seattle had 8 houses and a lumber mill. There were 170 white people in the county. Many Indians lived in small villages near the village. The village was exporting lumber and living off fish, clams, and some agricultural produce from the valley, as well as from some imported food products.

data.

B. Some white men visited the area in search of a home in 1851 and then brought the rest of their party up from Portland by boat. This party consisted of 5 families made up of 12 adults and 12 children. They settled on a

14. Read aloud Vancouver's description of what he saw of the land and of the Indians when he explored the Sound in 1792. Tell pupils who Vancouver was before you begin. Let pupils make a chart to show how the Indians made use of this area.

    Have pupils suggest other ways in which Indians may have made a living from the area. Then let an able pupil read further selections to see if the class is correct. He should report to the class. Have the class add additional information to the chart.

15. Have pupils look up the population of the county in which Seattle was located and the number of homes in Seattle in 1853.

    Project several slides showing: (1) the first log cabin on Alki Point, (2) the Thomas Mercer Home built in 1854, (3) the first sawmill in Seattle, and (4) the Founder's Claims Map, showing the Yessler access. After showing the first slide, ask: Why do you think the first cabin was built of logs? After showing slide two ask: How does this house, which was built three years later, differ from the first cabin? What must have happened to make such a cabin possible? Then show slide three of the sawmill. Also show slide four and have pupils note the way in which claims were staked out at the present site of Seattle along Elliot Bay. Ask: If you were the owner of this sawmill, why might you wish a lot which extended up the hill from the bay, rather than a longer lot along the water front somewhere else?

16. Have pupils examine a map of Puget Sound. Point out Alkao Point and Elliot Bay. Ask: Why do you think settlers built first on a point in shallow water and then moved to the present site in Elliott Bay? Let pupils make guesses and then have them read descriptions of the

ption of what he saw of the he explored the Sound in ver was before you begin. ow how the Indians made use	See Appendix.
s in which Indians may have Then let an able pupil e if the class is correct. . Have the class add ad- hart.	Anderson, Chief Seattle, pp. 29-32, 35-41, 44-49.
ation of the county in the number of homes in	"Student Almanac."
g: (1) the first log cab- mas Mercer Home built in n Seattle, and (4) the the Yessler access. After Why do you think the first er showing slide two ask: s built three years later, What must have happened to Then show slide three of the r and have pupils note the ed out at the present site Ask: If you were the own- you wish a lot which ex- ay, rather than a longer ewhere else?	These slides may be purchased from the Seattle Museum of History and Industry. The Museum's numbers for the slides are: 109, 245, 543, and 108. A picture of the first cabin can also be found on p. 4 of Warren, Pictorial Hist. of Seattle.
Puget Sound. Point out Ask: Why do you think set- n shallow water and then lliott Bay? Let pupils m read descriptions of the	For a map of Puget Sound, see Hanna, et.al., Ten Communities, pp. 336-381; W.P.A. Guide. Washington, pp. 213-214;

G. The significance of location depends upon cultural developments both within and outside a country or region.

G. Man changes the character of the earth.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

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point, rather than the present site of Seattle. They named the settlement New York and they added the term Alk (New York By and By).

C. Early in 1852 a ship arrived from San Francisco and wished to buy logs. The settler cut timber and sold a large shipload. However, they found it difficult to bring the logs a fairly long distance or to load the logs on the ship which could not come close to shore in the shallow water by the point. Moreover, the point was not well protected from storms. Consequently, the settlers searched the area for a more protected harbor with deeper water close to shore and with forests close to the shore on hills, so that logs could be skidded down hill into the water. Most of the settlers moved to the present site of Seattle.

D. A year after the village was established, a new arrival set up a saw mill. He persuaded the settlers to give him a narrow strip of land to connect the forest area which he claimed and the water front. He dragged the logs down this strip or "skid road" to his mill, where he sawed them into lumber for export and for the needs of the growing town.

first two years in Seattle to check their guesses. Afterwards discuss the reason for the move and the way in which the town drew upon the resources of the area around it. Also ask: How did early Seattle depend upon other places?

Dederick, et.al., Your Country and Mine, pp. 288-291.

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G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. The town i
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G. Although culture is always changing, certain parts or elements may persist over long periods of time.

H. The Indian
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G. Innovations may come about as a result of diffusion or borrowing from other people.

G. When people are in direct contact with one another, they tend to borrow cultural traits.

G. When people migrate from one place to another, they take their culture with them.

E. In 1853 the town shipped its first load of tree spars to China.

F. The earliest attempt to ship salmon to San Francisco failed because of the lack of refrigeration. The fish spolied on the way. However, the townspeople caught and ate many fish and also dug and ate clams. They learned how to do so from the Indians of the region.

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G. The town imported by boat many articles, including flour and other foodstuffs.

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H. The Indians and the white people borrowed some cultural traits from each other; however, the two groups differed in some ways in their use of the environment.

17. Have pupils read through the list of goods ordered by the Seattle settlers from San Francisco, to be brought back by the ship Leonesa in early 1852. Discuss: What does this list show us about the small colony at Seattle?

    Now read aloud excerpts from Watt's account of the food shortage during the winter of 1852-53 when the winter was so bad that ships could not bring in provisions.

18. Have a pupil give a report on how the Indians lived in the Seattle area in 1853. He should include a description of their big house across the Sound and discuss the way in which they treated early settlers. Project slides or pictures showing life among Indians in the Puget Sound area after the white men came to the area. Point out that these pictures show Indian life somewhat later than 1853 but still show a number of ways in which the Indians lived in 1853 and also ways in which they had been affected by contact with the white man.

    Read aloud: (a) a brief excerpt from Watt on the tools of the Indians during this early period in Seattle's history, and (b) a description of some of the things which the early settlers learned from the local Indians.

n the list of goods ordered by om San Francisco, to be brought a in early 1852. Discuss: What about the small colony at Seat-	"Selected Readings on Seattle."
from Watt's account of the food ter of 1852-53 when the winter was not bring in provisions.	Watt, 4 Wagons West, The Story of Seattle, pp. 85-88.
port on how the Indians lived in . He should include a description s the Sound and discuss the way ly settlers. Project slides or ong Indians in the Puget Sound came to the area. Point out Indian life somewhat later than mber of ways in which the Indians ays in which they had been af- he white man.	Anderson, Chief Seattle, pp. 50-65 and map on inside cover; W.P.A. Guide, Washington, p. 215; Morgan, Skid Road, pp. 39-41.
excerpt from Watt on the tools is early period in Seattle's his- ion of some of the things which ed from the local Indians.	For a discussion of the tools, see pp. 3, p. 57 of Watt, 4 Wagons West. For a description of the things learned by the white man, see the last paragraph on p. 56 of the same book.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Gains information by studying pictures.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Gains information by studying pictures.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

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IV. We look at Seattle in the period 1872-1879.

A. The population of Seattle had grown to 1,107 people by 1870; a few hundred Indians still lived in the neighborhood. The town remained largely a lumber town.

B. The town had grown, but its growth was still limited by the restricted demand for its products and by the lack of railroads connecting it with eastern markets.

1. By 1860 the town was shipping lumber to China, England, Spain and France, as well as to San Francisco. However, this market remained small. The town could also consume some of the lumber itself as more people moved into the area. However, it was not shipping lumber to the east or sending it to the midwest.

a. The forests of Minnesota, Wisconsin and Michigan provided plenty of lumber to satisfy the midwestern and eastern demand at this time. Not until these

Discuss: In what ways had the life of the Indians remained much the same since 1792 when Vancouver sailed into the Sound? In what ways had their life changed? Why had it changed? How did the early white settlers differ in their use of the area from the way in which the Indians used it? Why did they differ? Why were some of their ways of making a living similar to those of the Indians?

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19. Ask: Given this good forest area and harbor, what would you expect to have happen to the population of Seattle by 1870? Let pupils predict the population and growth of Seattle. Then have them read to check their predictions. Show pupils a series of slides of Seattle in 1865 and 1870. Include street scenes, Yesler's mill, and Yesler's home built in 1870. Discuss the changes which had taken place since 1853. Discuss: What factors limited Seattle's growth? What factors brought about the growth which did take place? How did Seattle serve the surrounding area?

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Slides from the Museum of History and Industry in Seattle: No's. 76, 1040, 242. Pictures from the Horace McCurdy Collection in the same museum: No's. 1176, 1193, 1209, 1195, 1203, 12'0. Or see similar pictures in McCurdy, Indian Days at Neah Bay.

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Hanna, et.al., Ten Communities; "Selected Readings on Seattle." Slides from the Museum of History and Industry in Seattle. (Slides # 484, 553, 85, 1568, 55, 1512.)
For pictures of Seattle around 1870, see Warren, Pictorial Hist. of Seattle, pp. 7, 9.

2.

3.

S. Evaluates sources of information in terms of competency of authors.

4.

G. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

5.

forests had been cut over fairly thoroughly, were the big timber companies willing to move to the Seattle area.

b. Seattle could ship goods out by ship but was not connected with the midwest, south, or east by railroads. This lack of good transportation facilities limited its markets and made it more difficult to bring in goods or for people to come to the area.

2. There was some commercial fishing, but no cannery as yet.

3. The town received a boost when the town, which had been dominated by men, persuaded two groups of women to come to the area to marry Seattle men. These women were called Mercer girls after the man who undertook the expedition.

4. Seattle had become the central place for selling supplies to the lumbering camps and farmers of the area and for banking their savings. It also served as a collection and processing place for the logs and other supplies and as a place from which goods could be sent out to other places.

5. The population was boosted somewhat when gold was discovered on the Fraser River in Canada. Some 20,000 men went through Seattle on their way to this strike; Some returned and stayed in Seattle. Seattle

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20. Read aloud Binn's description of how Horton began his banking career. Compare with the description in the WPA Guide. Ask: Where did the author of each get his information? Which bank do pupils think might be the better source of information? Why? Also discuss: What role might banking play in the development of a city and its hinterland.	Binns, Northwest Gateway, 74. WPA Guide, Washington, p. 214.

G. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

S. Sets up hypotheses.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Gains information by studying pictures.

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supplied many of their needs as they moved into the gold region.

6. The state decided to build the state university in Seattle which donated some land. The university began with a single wooden classroom building, a student boarding house, a home for the President and a one-man staff.

7. Although a brief Indian uprising took place in 1855, the Indians proved relatively friendly. By and large the town was not bothered by trouble with Indians as were some towns on the frontier. Instead, the Indians lived peacefully and worked with the white people.

8. A newspaper was established in Seattle in 1863. Also Seattle was connected with the rest of the country by telegraph the same year.

9. Coal mines were opened at Coal Creek, close to Seattle, in 1864.

21. Read aloud a description of the university in 1861. Compare the university with some college which pupils know. Discuss: How might the location of the university in Seattle help the town? How might the university help the state?	Seattle Century, p. 83.
22. Have several pupils role-play an interview between a settler and an eastern newspaperman about the Indian uprising of 1855. The interview should conclude with predictions about what the uprising and its settlement will mean for the town.	Binns, Northwest Gateway, chs. 7-8. Hanna, et. al., Ten Communities.
23. Tell pupils about establishment of newspaper and the tie-up with the transcontinental telegraph. Discuss: What effects do you think these two developments might have upon Seattle? Why?	
24. Describe the opening of the coal mines. Ask: How might these mines affect Seattle? Why didn't the Indians use them earlier?	
25. Show pupils a series of slides of Seattle in 1878. Ask: How had the city changed since 1870? What factors do you think may have caused the growth of the town?	Slides from the Museum of History and Industry in Seattle. (Slides # 557, 1331, 559, 89, 1187, 1253,

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

S. Sets up hypotheses.

G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

S. Gains infromation by studying pictures.

S. Generalizes from data.

S. Sets up hypotheses.

V. We look at Seattle in 1896-97.

A. There were 2,000 factories in Seattle in 1896 and a population of over 43,000. (This is an estimate based upon people's guesses and the 1890 census, since no new census was taken in city that year.)

26. Project a picture of slide of the old wooden pipes and water system. Ask: Why did the people use wooden pipes for their water system?

27. Have pupils look up the estimated population figures for Seattle in 1896. Discuss: Why do you think we do not have accurate figures for this date? Also have pupils check figures for the number of factories in Seattle at this date.

Discuss: What would this population and the number of factories indicate about the town. What other kinds of stores would have been needed? What would pupils expect to be the main industries of Seattle at this time? What do they think might have accounted for the town's growth?

28. Show slides of the Yesler home built in 1883, of the Stacy home built in 1885 and of the Seavy home built in 1886. Ask: How do these houses compare with those of the earlier periods which you studied? What do they indicate about what has happened in Seattle? How do you think the men were able to get enough money to build such homes?

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Or see pictures in Leighton, Five Cities, opposite p. 262; Warren, Pictorial History of Seattle, pp. 12-13.

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Seattle Century, p. 16. Or see slide #1230 from the Museum of History and Industry in Seattle.

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"Student Almanac," "Selected Readings on Seattle."

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town. What other kinds of
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Seattle at this time? What
ounted for the town's growth?

me built in 1883, of the
of the Seavy home built
houses compare with those
you studied? What do they
ened in Seattle? How do
to get enough money to build

Slides # 55, 401, and 494 from Museum of History and Industry in Seattle.

S. Gains information by studying pictures.

S. Tests hypotheses against data.

G. The people who live in one community depend upon each other for different goods and services and for markets for their goods.

S. Sets up hypotheses.

S. Tests hypotheses against data.

B. Lumbering was the most important industry of the region, but commercial fishing was also very important. There was the beginnings of a ship-building industry.

S. Tests hypotheses against data.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

S. Gains information by studying pictures.

S. Generalizes from data.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources,

29. Project pictures showing Seattle in the 1890's. A
project a map of Seattle in the 1890's. Discuss:
had happened to Seattle since 1878? What kinds of
changes do you notice? Do any of the pictures sup
your guesses about types of stores or industries?

30. Project two slides, one showing a sailing vessel i
Sound and one showing a side-wheeler steam boat in
Sound. Discuss: What do these two pictures sugges
you about the growth of Seattle? What kinds of ind
tries might you expect to grow up because of the im
tance of shipping? Now project a slide showing the
building of the first ship in 1879.

31. Now have pupils read brief excerpts on Seattle in
period to check their guesses. Discuss.

32. Project slides or other pictures of logging in the
around Seattle in the late 19th century. Have pup
compare logging in this area with logging in Minnes
Discuss: What kinds of industries would you expec
grow up because of the logging operations in the a

wing Seattle in the 1890's. Also
ttle in the 1890's. Discuss: What
tle since 1878? What kinds of
e? Do any of the pictures support
ypes of stores or industries?

Slides # 1906 (map), 1192, 1809, 229, 276, 277, 279 from the Museum of History and Industry in Seattle. Also see pictures on p. 21 of Warren, Pictorial History of Seattle and on p. 44 of Seattle Century.

one showing a sailing vessel in the
g a side-wheeler steam boat in the
at do these two pictures suggest to
of Seattle? What kinds of indus-
ct to grow up because of the impor-
Now project a slide showing the
t ship in 1879.

Slides 267 and 270 from the Museum of History and Industry in Seattle. For building of first ship, see slide 238 from the same museum.

brief excerpts on Seattle in this
r guesses. Discuss.

"Selected Readings on Seattle."
Hanna, et. al., Ten Communities.

her pictures of logging in the area
e late 19th century. Have pupils
his area with logging in Minnesota.
of industries would you expect to
he logging operations in the area?

Slides # 2002, 2014, 2001, 2012, 1028, 2017 from the Museum of History and Industry in Seattle. Or pictures #'s 1643, 1642, 1640, 1635, 1636, 1637, 1630, 1628, 1629, 1627, 1633, 1632, and 1634 from the Horace McCurdy collection in the same museum. For a some-access to markets, people's skills, landforms, etc.

S. Gains information by studying pictures. C

S. Sets up hypotheses.

S. Tests hypotheses against data.

S. Sets up hypotheses. D

G. Improved transportation facilities make possible wider and bigger markets for goods as well as greater and less costly access to resources.

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y access to resources.

C. The great fire of 1889 destroyed most of the older wooden buildings, and Seattle was rebuilt with brick and iron.

D. The rapid development of Seattle in the 1880's and early 1890's was brought about largely by the beginning of the railroad era.

1. After a long war over trying to get a railroad connection with the eastern part of the country, the Northern Pacific finally gave in and made Seattle part of its operations. A second transcontinental railroad reached Seattle in 1896.
2. The railroads made it easier for people to come to Seattle to settle and also for Seattle to ship its goods to the midwest and east and to obtain goods from those sections of the country.

33. Show slides or pictures illustrating other industries such as salmon fishing, an early salmon cannery, and oyster picking.

34. Show the class slides of Seattle just before, during, and after the Great Fire of 1889. Discuss: Why do you think this fire spread so rapidly? Would a fire in a large city today be likely to spread just as rapidly? Why or why not? What would you expect the results of such a fire to be on the city of Seattle? Why?

    Perhaps have two pupils give a report on the Great Fire and its effects upon Seattle by role-playing an interview between mayor of Seattle and an eastern newspaper reporter. Discuss: Does the data support your earlier suggestions about the effects of the fire?

35. Have several pupils present a report on the railroad wars between Seattle and Tacoma and the Northern Pacific Railroad. Discuss: How would the completion of a railroad line and then the coming of a second railroad line affect Seattle? Have a pupil read and report on the effects. Or read aloud selections on the effects.

	what later picture of the early 1900's, see Morgan, The Pacific States, p. 46.
illustrating other industries an early salmon cannery, and	Slides #'s 2028, 2027, and 2024 from Museum of History and Industry in Seattle.
Seattle just before, during, of 1889. Discuss: Why do you o rapidly? Would a fire in a ly to spread just as rapidly? uld you expect the results of city of Seattle? Why?	Slides #'s 455, 33, 404, 1175, 405, 135, 59, 160, 170, 174, 1164, 704, 172 (map of burned area), 154, 167, 1179, 1308.
give a report on the Great Fire ttle by role-playing an inter- attle and an eastern newspaper s the data support your earlier fects of the fire?	Binns, Northwest Gateway, ch. 15; Hanna, et.al., Ten Cities.
ent a report on the railroad Tacoma and the Northern Pacif- How would the completion of a he coming of a second railroad ve a pupil read and report on oud selections on the effects.	Binns, Northwest Gateway, chs. 12-13; Hanna, et.al., Ten Cities.

S. Gains information by studying pictures.

S. Sets up hypotheses.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. A change in situation brings about a corresponding change in the use of a site.

G. Cities are likely to grow up if they

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3. The railroads also made it easier for Seattle to bring grain from the rich farm lands east of the Cascades across the mountains and to the Seattle port.

VI. We look at Seattle in 1910.

A. The population of Seattle in 1910 had jumped to 200,000 or over three times that of 1896.

1. The city had developed many more industries including a large shipbuilding industry.

2. Seattle had developed a very large shipping trade with the Far East and with other parts of the west coast.

3. The city was still basically built upon the lumber of the region, although coal production from nearby coal towns had also become important as a factor in shipments.

B. This growth was due in part to the railroads, and in part to the discovery of gold in Alaska in 1897.

1. Alaska became the outfitting place and supplier for the Alaska gold-seekers during the gold rush. It continued to dominate the trade with Alaska.

36. Have pupils look up Seattle's population in 1910 and compare this figure with the 1896 figure. Show pictures of Seattle in the early 1900's. Also project a map of Seattle from around 1910. Have pupils compare what they see with what they saw of Seattle in the 1890's. What changes have taken palce?

Read aloud brief descriptions of industry, shipping trade, and coal production, etc. Have pupils compare with the situation in 1896. Have the class set up hypotheses about what might account for this phenomenal growth.

Show a slide of the building of the U.S.S. Nebraska in 1904. Discuss: Why do you think the government ordered this battleship from Seattle. Why do you think the shipbuilding industry grew after 1890? What would be the effects on Seattle of this growth?

37. Have a pupil tell the class about the Alaska gold rush, or have all of the pupils read exerpts on the rush. Do not have the pupil report on or the students read about the effects upon Seattle as yet.

Ask: Suppose you were a person who wanted to get to Alaska to make a fortune in the gold fields. What route would you have taken in the late 1890's? Why? Let pupils discuss different routes. They should note that th

ttle's population in 1910 and h the 1896 figure. Show pic- early 1900's. Also project round 1910. Have pupils com- what they saw of Seattle in es have taken palce?	"Student Almanac." Slides #127 and 1907 (map) from the Museum of History and Industry in Seattle. Also see pictures on p. 29 of Warren, Pictorial History of Seattle.
ptions of industry, shipping ion, etc. Have pupils compare 896. Have the class set up hy- ht account for this phenomenal	See background paper for unit. Also see appendix for quotations on Seattle sky-line in 1905. For a discussion of Japanese trade see Hanna, et. al., Ten Communities.
lding of the U.S.S. Nebraska do you think the government from Seattle. Why do you ndustry grew after 1890? What Seattle of this growth?	Slide #126 from the Museum of History and Industry in Seattle.
lass about the Alaska gold rush, ls read exerpts on the rush. Do rt on or the students read about e as yet.	W.P.A. Guide, Washington, p. 218-219. Hanna, et.al., Ten Communities.
a person who wanted to get to A- in the gold fields. What route the late 1890's? Why? Let pu- outes. They should note that they	

perform functions which are needed by the surrounding community or for a larger functional region.

S. Sets up hypotheses.

G. Prices are affected by changes in supply and demand.

G. Cities which become big trading centers tend to grow up where there is a break in transportation and so where goods must be moved from one type of transportation to another or from one company's transportation facilities to those of another company.

S. Gains information by studying pictures.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. A change in situation brings about a corresponding change in the use of a site.

G. Cities are likely to grow up if they perform functions which are needed by the surrounding community or for a larger functional region.

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2. The shipyards grew greatly because of the need for more transport of men and goods to the Alaska gold fields.

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could not fly in those days. What kinds of transportation could take them there? Also point out the size of Alaska cities in those days and the great demand for goods there. If they had been gold hunters what would they have done before going to Alaska? Why? (Here is a chance to disucss effects of demand and supply upon prices in Alaskan cities.)

Perhaps show a series of slides on the gold rush and the effects on Seattle such as: (a) pictures of crowds collected around ships headed for Alaska, (b) the first gold received from Alaska, (c) dog teams in Alaska and a training school for dogs in Seattle, and (c) river boats under construction at the Moran Shipyards.

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38. Have pupils read or have the student continue his report on the effects of the gold discovery and rush upon Seattle. Quote Morgan on the advertising campaign carried on by the Chamber of Commerce during the gold rush. Perhaps show sample materials. Also quote the W.P.A. Guide on the growth of shipbuilding during this period.

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Ask: Once the gold rush had died down, what would happen to Seattle? Why? Discuss the continued role of Seattle, because of its position, in the Alaskan trade. (You may wish to use some historical maps of this period to show development of Canada at this time.)

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Slides #'s 843, 844, 459, 30, 840, 27, and 846 from Museum of History and Industry in Seattle.

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Morgan, Skid Road, pp. 162-164.

W.P.A. Guide, Washington, p. 219.

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nada at this time.)

G. Cities which become big trading centers tend to grow up where there is a break in transportation and so where goods must be moved from one type of transportation to another or from one company's transportation facilities to those of another company.

G. Cities need means of shipping goods in and out; they are likely to grow up where transportation is good, particularly where different types of transportation meet.

G. Man changes the character of the earth.

S. Gains information by studying pictures.

G. Certain physical features of a site are more desirable than others for the development of a port city.

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3. The railroads gradually increased the amount of goods which Seattle could ship across the country. They also made it possible to thousands of gold rushers to get to the city for their take-off to Alaska.

C. Seattle adapted techniques of sluicing for gold, learned from this rush, to wash away the tops of its hills into the harbor. This meant that it added land along the harbor and made transportation and building and so expansion easier in Seattle.

39. Remind pupils of the completion of a second transcontinental railroad to Seattle in 1896. Tell them that a third transcontinental line was completed in 1909. Ask: Why would having two railroad connections with the east have been important during the gold rush period? Why would it have been important to help Seattle maintain its growth once the gold rush was over?

40. Remind pupils of the great hills of Seattle, and the problems of transportation. Ask them to try to put themselves into the places of these Seattle people. They needed to expand the city to take care of all of these new people. What problems would these hills make? Why might they wish to expand the amount of land along the harbor? (You may wish to describe the tide situation at this point.)

Have a pupil give an illustrated report with slides on the Seattle regrades. He should describe how the people sluiced the top of the hills down into the harbor to expand the harbor and lower the hill levels.

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He should describe how the people
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lower the hill levels.

W.P.A. Guide, Washington, p. 219. Hanna, et. al., Ten Communities. See quote from Keller in the appendix.
Slides #'s 28, 21, 388, 390, 389, 385, 392, 16, 1830, 19, 119, 44, 18, 20. from the Museum of History and Industry in Seattle.
Or see picture on p. 28 of Warren, Pictorial History of Seattle.

S. Interprets map symbols (contour lines).

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

S. Interprets graphs.

VII. We look at Seattle in 1940.

A. The population of Seattle in 1940 was 369,302, and the city covered an area of 73.63 square miles.

41. If you have not done so earlier, introduce pupils to U.S.G.S. maps. Draw their attention to contour lines. (Perhaps use an opaque projector to project a map on a screen.) Now use several devices to teach pupils the meaning of contour lines. Use models build up from a contour map of an imaginary island. Or use a model with contour lines drawn around it, with slender sticks stuck into the clay model on the contour lines and projected up to a piece of heavy clear plastic on which the contour lines are projected. Or give pupils a map with a number of dots for make-believe cities. Give them a table for elevations of these places and have them place the elevation beside each city. Then have them locate all of the cities of a certain elevation beside each and connect them with lines. They should do the same thing with other elevations. Or show pupils a raised plastic relief map of a U.S.G.S. section and let them see how the relief looks, given the different contour lines.

42. Have pupils use the U.S.G.S. map of Seattle to build a relief model of the section nearest the harbor. Several pupils might project the map with an opaque projector onto a large sheet of wrapping paper, tracing in the contour lines. Then the contour lines might be traced onto thick sheets of corrugated cardboard and put out to make a relief model. The model can be covered with a salt-flour mixture or with clay and painted.

43. Have a pupil make a graph to show the growth over the years of Seattle's population. He should include the population of 1940. Have another pupil prepare a graph comparing the area of Seattle in 1940 with that in 1853, when the town was first registered. Show the graphs and a map of the growth of Seattle to the class and discuss

"Student Almanac."
See Appendix for map.

S. Sets up hypotheses.

S. Gains information by studying pictures.

G. Man changes the face of the earth.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

S. Compares distances.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

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B. A number of factors contributed to Seattle's growth. Some were internal to Seattle or Washington and some had to do with events elsewhere in the country and the world.

1. Shipping facilities were improved in Seattle.

   a. In 1911, the Duwamish River was improved for water transport.

   b. A canal and locks were completed in 1917 to tie Lake Union and Lake Washington up with the Sound. This made possible shipping into the peaceful harbor of Lake Washington to the east of Seattle. The canal was the second largest canal in the world when it was built.

2. The Panama Canal had been completed in 1915. This canal made it easier and less expensive to ship goods by water to the eastern part of the country and to Europe.

the overal growth of the town, particularly the growth since 1910. Have pupils try to figure out what might have caused the great growth since 1910.	
44. Project pictures of some of the stores and factories of the 1930's and 1940's and ask pupils what has happened to the kinds of business conducted in Seattle by 1940	W.P.A. Guide, Washington. Escabosa, Seattle Story.
45. Tell pupils about the improvements on the Duwamish River in 1911. Ask: What effect would these improvements have upon Seattle.	W.P.A. Guide, Washington, p. 220. See Background Paper for Unit.
46. Project pictures showing the canals, ships, and large rafts in Union and Washington harbors. Have pupils try to figure out what possible advantage there might be to having such canals and harbors in fresh water. Then read aloud a description or analysis of these advantages.	Seattle Century, pp. 92-93 W.P.A. Guide, Washington, p. 220. A Picture Book of Scenic Seattle, pp. 16-18. Seattle and Puget Sound, pp. 6-7.
47. Have a pupil prepare a chart comparing the water distance from New York to Seattle by way of the Panama Canal and by way of the tip of South America. Show the chart to the class. Discuss: Why was the building of the Panama Canal important to Seattle?	

G. The people of the world are interdependent.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. Power for industry may be obtained from the use of water power to produce electricity.

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3. The aircraft industry which began prior to World War I when planes were made of wood and the lightweight Douglas fir was one of the best materials had continued to grow.

   a. The growth results in part because of the historical development of one of the most important airplane corporations there and in part because of the development in the vicinity of new materials needed for modern planes.

   b. The first aluminum plant was completed in 1940; this plant was made possible by plentiful ores in the region and by plentiful electricity from waterpower.

48. Read aloud or paraphrase a description of the effects of World War I upon Seattle. Discuss: Why would so many people move into Seattle during the war? What might be produced there for the war effort? Then give pupils some figures on the shipping industry.

49 Have a pupil investigate the history of aircraft in the Seattle area and particularly of the Boeing aircraft industry. He should wirte to Boeing for materials. He should tell the class about his findings.

50. Have several pupils investigate the making of alunimun and the materials and other resources needed. They should report to the class and use maps to help explain the possibilities for aluminum production in the Seattle area. For example, they might show a map of bauxite deposits and a diagram of the system of dams on the Columbia River. They might use photos and other materials to tell pupils about the plants located there by the Aluminum Co. of America, the Reynolds Metals Company, and Kaiser Aluminum and Chemical Corporation. (They should send for leaflets from the companies.) Discuss: Why might companies put up aluminum plants here when there were other areas with electricity and ores for making aluminum? (Help pupils see the relationship to the airplane industry and to transportation routes.)

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Seattle Century, pp. 50-53.

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Encyclopedias.
Map showing bauxite deposits in U.S. or North America.
Morgan and the Editors of Time - Life Books, The Pacific States, p. 60.
Dederick, et.al., Your People and Mine, pp. 301-302.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. A change in situation brings about a corresponding change in the use of a site.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. A change in situation brings about a corresponding change in the use of a site.

S. Gains information by studying pictures.

S. Interprets graphs.

S. Sets up hypotheses.

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4. As transportation improved and national parks and forests began to attract more visitors, many people began to visit Seattle because of recreational attractions in the area.

5. As the total population and living levels increased in the nation, Seattle benefited because of markets for its goods. Despite the hard times of the 1930's, the market was still greater than in 1910. Moreover, the war in Europe in 1939 and defense preparations in this country stimulated Seattle's ship building and airplane industries.

VIII. We look at Seattle today.

A. The population has increased sharply since 1940. By 1960, for example, Seattle had a population of 557,087 and an area of 88.5 square miles.

51. Obtain illustrated materials and brochures and maps from such sources as the National Park Service, the Forest Service, from the Seattle Chamber of Commerce and from the Seattle Museum of History and Industry on recreational facilities in Washington. Prepare a bulletin board display showing some of these recreational areas, with strings tied between the area to the map of the states. (Perhaps show slides also.) Have pupils examine the bulletin board map. Ask: What advantages does Seattle have in relationship to these recreational areas? (Use maps of railroads, airlines, and a road map of the state to help answer this question.)

52. Have several pupils study the 1941 W. P. A. guide to Washington and present information about other parts of the state and nation which affected Seattle at that tim They should prepare a chart of these changes. Discuss: How would these changes within Seattle and the state of Washington affect Seattle's growth? How would changes outside of the state affect its growth?

53. Show a series of slides of Seattle as it looks today. Have pupils compare these views of Seattle with earlier views. Ask: How has Seattle changed since 1940?

54. Have pupils look up current population figures and the present-day area of Seattle. Have pupils compare with figures for 1940 and earlier dates studied. Perhaps have a pupil make a graph to show population changes. Discuss: What has happened to the rate of growth since 1940? Why hasn't the area grown as rapidly? Where do you think people might move after Seattle proper became crowded?

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the National Park Service, the
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e.g. Scenic Washington,
Seattle and Puget Sound.
Pana-vue Slide Sets #EP-202.
(Ranier Nat'l. Park).

study the 1941 W. P. A. guide to
information about other parts of
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W. P. A. Guide, Washington.

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Pana-Vue Slide Sets: EP-214, EP-229, EP-225

current population figures and the
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"Student Almanac", (for 1960 figures). World Almanac for more recent figures.

S. Tests hypotheses against data.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

S. Sets up hypotheses.

S. Tests hypotheses against data.

G. A number of factors--climate, surface features, natural resources, accessibility, and history--affect settlement and growth patterns.

G. Types of agriculture in a region depend upon man's cultural values, perceptions, and technology as well as upon climate, soils, and topography.

G. Some things can be produced better in one place than in another because of climate, resources, transportation

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1. Seattle proper has an hour glass shape, stretching out more thinly in the middle between Elliott Bay and Lake Washington and spreading out more widely to the north and south.

2. Seattle is surrounded on land by suburban areas in a much wider metropolitan area.

B. Seattle has many of the characteristic features in terms of land use of other important seaports. To the east, land use and population distribution is also characteristic of regions around large cities, particularly near mountains.

55. Show pupils a large-scale map of Seattle and environs. Have a pupil trace the map of Seattle proper. Show it to the class and ask pupils to describe the shape. Why is Seattle so much narrower in the middle than at both the northern and southern ends? Let pupils examine a physical map of the region to help them explain this shape. Now have pupils note the way in which suburbs have grown up around the city proper. Where are they found? Perhaps have pupils compare a current map with a map of 1940.

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56. Perhaps show pupils the picture of Newport Hills, a suburb of Seattle, and the identification of where the residents on one street came from before living in the area. Ask: How long had most of these residents lived in this suburb? Where did they come from? What does this information indicate about Seattle's attractiveness of people in other states?

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57. Have pupils look at a large scale map of present-day Seattle and its environs, including the Cascade mountains. (Perhaps piece together U. S. G. S. maps and place them on the floor.) Then have pupils take an imaginary trip such as suggested in the background paper for this unit. They should start in the Cascades at the peaks and move westward toward Elliott harbor. Begin by having them locate the Cascades. Then project photos of some of the high Cascade country. Pupils should note that in this wilderness area there are practically no people. Whom might they find there?

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Have pupils move down lower in the cascades into the foothills. Ask: What might you expect to find in this region? Perhaps have the class examine the U. S. G. S. map to find out. If not, read aloud a brief description, show pictures of the area, or just tell the class about the

cale map of Seattle and environs. e map of Seattle proper. Show it pupils to describe the shape. Why rrower in the middle than at both hern ends? Let pupils examine a egion to help them explain this ls note the way in which suburbs the city proper. Where are they pupils compare a current map with	Map of Seattle and environs for present day. A 1940 map is found in the W.P.A. Guide of *Washington*.
he picture of Newport Hills, a sub- he identification of where the re- came from before living in the had most of these residents lived e did they come from? What does cate about Seattle's attractiveness ates?	Morgan and the Editors of Life, *The Pacific States*, pp. 130-131.
large scale map of present-day ons, including the Cascade moun- e together U. S. G. S. maps and or.) Then have pupils take an s suggested in the background paper should start in the Cascades at the rd toward Elliott harbor. Begin by e Cascades. Then project photos of ade country. Pupils should note ss area there are practically no hey find there?	Large scale map of Washington or Seattle and Environs. U. S. G. S. maps. Park and Revis. Current books and magazine articles.
lower in the cascades into the foot- ght you expect to find in this region? s examine the U. S. G. S. map to ad aloud a brief description, show or just tell the class about the	

ranches and small dairy and poultry farms.

Now tell pupils that they will move further west into the more level land. Ask: What did this land look like when the Indians and early Seattle pioneers lived here? What might it look like today? Let pupils set up hypotheses

Ask questions to lead them to consider what the lumbering industry might have done and how such land might be used. Would they expect large farms in this area? Why or why not? Try to help pupils see that the land might be used for a variety of agricultural purposes. (Check against soil and climatic maps again. Ask: What kinds of products might be grown most profitably close to the center of population?

Now have pupils read or show them pictures and read aloud descriptions of how this cut-over rolling land is used.

Point out the city limits on the large map. Ask: What would you expect to find before you come to the limits? Why? Now point out or have pupils view some of the suburban developments. Ask: Would you expect to find the downtown area on the eastern edge of the city? Why or why not? Have pupils locate some of the central districts on a map of Seattle.

Have pupils set up hypotheses about population densities on such a trip. Have them check their guesses against a population map.

Now have pupils make a trip to Seattle by way of the Sound. They should be told that they cannot see Seattle proper by boat until they are ready to enter Elliott Bay. Ask: Why? What would you expect to find on the water front? Project pictures by way of checking ideas. Ask: Would you expect to find the main business district just back of the water front? Why or why not? Now have pupils examine the large-scale map or a city road map as you read them a description

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G. Forests can be used to obtain lumber and other timber products such as paper, turpentine, nuts, etc., depending upon the kinds of trees in the forest.

C. The increased population of Seattle helped lead to a diversification of functions in order to provide services and products needed. such a diversification in turn attracted more people.

1. Manufacturing has become increasingly important and diversified.

   a. The most important industry is the airplane construction industry.

   b. The boat and shipbuilding indsutry has remained important, although the building of large ships has declined in recent years in competition with other countries.

   c. The lumbering and forestry products industries continue to be important but do not account for such a large proportion of industry in the area as in earlier years.

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and show photos of how the land is used as one moves further east from the waterfront.

58. Give pupils figures or have a pupil make a graph to compare present-day income from different kinds of industry. How does lumbering fare today? Which industry is most important? How does this table compare with one they might have made for the Seattle of 1853 or 1870?

59. On the chalkboard, place figures comparing Washington's proportion of lumber production with other parts of the country. What do these figures indicate about the importance of the lumber industry to Washington? What would pupils expect to find true about forestry-processing industries in Seattle?

See background paper.

60. Have a pupil write to one of the big lumbering companies of Seattle or Washington for information about its activities and the lumbering industry in Washington. He should report to the class.

Or see Dederick, et.al., Your Country and Mine, pp 292-295.

G. Man uses his physical environment in terms of his cultural values, perceptions, and levels of technology.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

G. The growth of factories in a town attract people, stores, etc., which in turn make the area more attractive to new factories and also stimulate the growth of old ones.

G. People in most societies of the world depend upon people who live in other communities, regions, and countries for goods and services and for markets for their goods.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

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d. Fishing and related fisheries industries continue to grow, although they are less important relatively than earlier.

e. Seattle has also become an important processing center for wheat and other grains from the farmlands east of the Cascades.

f. Seattle also has a variety of other processing and manufacturing plants.

2. Seattle continues to grow as a marketing and trading center; it serves both its hinterland and state and also the nation as a whole in its commerce with the Far East.

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61. Have several pupils present a panel discussion on "
more of the scenic spots of Washington be protected
cutting by the lumbering industry in the interest o
serving scenic spots for the nation as a whole?"

62. Have a pupil give a report on the fishing industry c
Seattle. Then discuss: Why is fishing an importan
dustry in this area? Why has it grown since 1853?
does the fishing industry lead to jobs other than fo
fishermen?

63. Tell pupils that Seattle is a large wheat-milling ce
Where would it get its wheat? Have pupils examine
to find out. Then show photos of sections of Washin
where wheat is grown.

64. Have a pupil make a chart showing some of the other
ucts manufactured in Seattle. He might use cut-out
tures to illustrate the products. Discuss the sourc
the raw products needed for these industries.

65. Have pupils examine a table showing the Labor Force E
ployment in Seattle in 1960. Which is now more impor
in terms of employment -- manufacturing or trade?

a panel discussion on "Should Washington be protected from dustry in the interest of pre- nation as a whole?"	Use Reader's Guide. Write to Sierra Club. Write to lumbering companies, etc.
on the fishing industry of is fishing an important in- as it grown since 1853? How ead to jobs other than for	Dederick, et.al., *Your People and Mine*, pp. 295-297.
a large wheat-milling center. ? Have pupils examine maps os of sections of Washington	Morgan and the Editors of Life, *The Pacific States*, pp. 22-23. Dederick, et.al., *Your Country and Mine*, pp. 298-300.
owing some of the other prod- . He might use cut-out pic- ucts. Discuss the sources of these industries.	
howing the Labor Force Em- Which is now more important ufacturing or trade?	"Selected Readings on Seattle."

G. Specialization of regions makes for interdependence.

G. Central places may provide some functions for their hinterland, some for their state and region, and some for the country as a whole.

G. The significance of location depends upon cultural developments both within and outside of a country or region.

G. A change in situation brings about a corresponding change in the use of a site.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

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D. A number of factors have contributed to the continued growth of Seattle.

1. World War II, the Korean War, the defense program in general, and the war in Viet Nam have all stimulated construction and defense industries.

2. The discovery of oil in Alberta, Canada, led to the development of oil refineries in Seattle. The first one was built in 1955; since then this business has been enlarged greatly.

66. Have pupils examine a list of goods coming into Seattle. They should try to figure out where they come from and why they might be imported. Then have them examine a list of goods being exported from Seattle. Where do these goods come from?	"Selected Readings on Seattle."
67. Invite someone who has visited or lived in Seattle recently to come to class to tell pupils about the city. He should be prepared to answer questions which pupils have developed as a result of their study thus far.	
68. Give pupils dates for World War II and a little information about the extent of the war. Then have a pupil make a graph to compare the number of Boeing workers in Jan., 1940 and the number in Jan., 1945. Discuss the effects of World War II upon the Boeing plant. How would this affect the rest of Seattle?	
69. Have a pupil use old magazines or clippings from them to prepare a report on "Ship Building in Seattle During World War II." Discuss the effects on Seattle of the influx of workers. Then tell pupils what is happening to industry today because of foreign competition.	Reader's Guide.
70. Tell pupils that oil was discovered in Alberta. Let them locate Alberta on a map. Ask: What cities might refine this oil? Now show the class how the oil is piped down to Seattle. Ask: What advantages are there in piping it there for refining?	Map of Canada and Northern U.S.

G. A change in situation brings about a corresponding change in the use of a site.

G. Some things can be produced better in one place than in another because of climate, resources, transportation routes, access to resources, access to markets, people's skills, landforms, etc.

S. Compares distances.

G. Improved transportation facilities make possible wider and bigger markets for goods as well as greater and less costly access to resources.

G. Factories need good transportation facilities, but large cities with many factories and large numbers of people also attract improved transportation facilities.

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3. The influx of population tends to start a spiral of development, since many services and goods are needed to take care of the new people; the expansion of businesses to do so creates a demand for new labor, etc.

4. Continued development of newer forms of transporation combined with those important earlier have contributed to Seattle's growth.
   a. Seattle's location as the nearest city to great circle routes to the Orient have continued to help build its shipping and has led to a great development as an air-traffic hub.
   b. The historical location on railroads and harbor, with the population growth which resulted, has made Seattle a natural hub for other forms of transportation such as highways and air-

71. Ask: How does the movement of large numbers of people to a city (as in World War II) cause an even bigger growth in population and business in the city?

72. Have pupils compare milage by sea from Los Angeles to the Far East by way of Hawaii with that between Seattle by sea along the great circle route.

73. Have a pupil examine a globe. He should use a string to figure out the great circle route from New York, Chicago, Minneapolis, etc. to Japan and other cities in the Orient. Which western city in the U.S. lies closest to this route? Why would it be a good site for an airline terminus in this country? Have a pupil investigate airline routes to the West Coast and the Northwest Orient routes to the Far East.

Globe and string.

74. Show pupils a road map of Washington and have them note the way in which roads lead into Seattle. Ask: Why did Seattle become a highway hub? Discuss the effect of increased auto transportation upon Seattle, both in terms

G. The significance of location depends upon cultural developments both within and outside of an area.

S. Generalizes from data.

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5. Rising prosperity in the country as a whole has helped Seattle by creating better markets, giving people more money for travel to places such as Seattle (or through Seattle to the Far East), and providing generally higher wages and profits for Seattle laborers and businessmen in Seattle as well as in other parts of the country.

background

of the development of suburbs and in terms of trade relationships with the hinterland.

75. Project tables showing the increased national income and increases in income per capita or income by different income groups from 1940 to the present-day. Ask: How would this general rise in levels of income affect Seattle?

76. Project pictures and perhaps maps showing the Seattle area for each of the dates studied.

Now hold a summarizing discussion in which pupils compare the Seattle of today with that in 1853 or even earlier when Indians occupied the region by themselves. How has the use of the physical environment changed? How has the environment been changed? What accounts for these changes?

77. Discuss: How does Seattle compare with other places you have studied in terms of its central place functions and the factors which have led to its growth?

78. Have several pupils write to the Seattle Chamber of Commerce for some of their advertising material trying to attract business, visitors, and dwellers. Have the class analyze these materials. What factors does the Chamber of Commerce play up in this advertising? Do you think the advertising claims are justified on the basis of what you know about this city and region? Why or why not?

S. Draws inferences from a comparison of different map patterns of the same area.

S. Develops a system of regions to fit a particular purpose.

G. A region is an area of one or more homogeneous features. The core area is highly homogeneous, but there are transitional zones where boundaries are drawn between different regions.

G. Precipitation is affected by factors such as distance from bodies of warm water, wind direction, temperature, ocean currents, and physical features which force winds to rise.

G. Temperature is affected by such factors as distance from the equator, elevation, distance from warm water, prevailing winds, and physical features which block winds from certain directions.

G. A number of factors -- climate, surface features, natural resources, accessibility, and history -- affect settlement patterns.

G. Man uses his physical environment in terms of his cultural values, perceptions, and level of technology.

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IX. The Pacific Northwest coastal region is characterized by a warm, humid climate; varied relief; a few large cities, mostly port cities; important lumbering and fishing industries; rapid industrialization; and agriculture which is not dependent upon irrigation.

79. Have pupils examine a series of maps of Washington and Oregon. They should compare rainfall, temperature, physical relief, population, and land use maps. Ask: What differences do you note between the immediate Seattle area and other parts of the Pacific Northwest? What might account for the differences? What might account for the similarities? How might you divide Washington and Oregon into two regions? Why? Point out that they will study the region east of the Cascades with the Intermountain sub-region of the West.

80. Have the class divide into groups to study other important cities in the Pacific Northwest coastal region such as Portland, Tacomoa, and Bellingham. Each group should try to decide why people settled there and what factors have led to its growth. The should also compare their city with Seattle. In what ways is it similar to and in what ways different from Seattle?

S. Generalizes from data.

G. Regions are delimited on many different bases, depending upon the purpose of the study. Some are delimited on the basis of a single phenomenon, some on the basis of multiple phenomena, and some on the bases of functional relationships.

81. Have pupils fill in the columns after the Northern Coastal region in the Regional Chart which they began during the unit on the Midwest. Ask: How does this region differ from the Midwest? the Northeast? the South?

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*Available for purchase from the Seattle Museum of History an
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A number of Pana-vue slide sets are available from Sawyers, Inc., P.O. Box 444, Portland, Oregon, 97207. A 25¢ catalog is available on request. Sample sets are inidicated below. Each set is $1.00.

E.P. 202	Ranier National Park
E.P. 225	Seattle, Washington
E.P. 229	Seattle, Washington
E.P. 214	Seattle, Washington from the Air
E.P. 218	Washington Big Timber

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Rainfall and forest
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Map of forests on p
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Part I: Seattle as an Early Lumber Port in the Pre-Railroad Era

The first pioneer settlers in the Seattle area were a group of 24 adults and children who arrived on a schooner from Portland, Oregon in November, 1851. These settlers settled originally on a point of land near the present city of Seattle. They named this point "New York" in the hope that it would eventually grow into a large city. However, they added the Chinook word alki which meant "by and by." To this day the point on which they settled is known as Alki Point.[1]

The first settlement proved only temporary for most of the first settlers. They constructed log cabins from the plentiful supply of local timber. They also established friendly relations with the Indians. However, their first attempt to obtain money by cutting trees and shipping out lumber led many of them to look for a new place to build. Only a few months after the settlers arrived, a ship anchored offshore seeking logs for piles for San Francisco. The settlers soon cut some 35,000 board feet of logs. However, they had great difficulty in loading the logs onto the ship. The water off the beach was very shallow for a considerable distance, and the ship could not come in close to shore. The settlers who wanted to continue to ship out logs felt that they needed to look for a site where the water remained deep close to shore. After sounding the water at various places with a clothesline weighted with horseshoes,
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horseshoes, three famalies staked claims at the present site of Seattle in February, 1852. They named their new settlement "Seattle" after the friendly chief of the Dwamish Indians.[2] These settlers were wise to move their settlement to the deep-water harbor site; the land selected is now the most valuable business property in Seattle.[3]

This settlement at the present site of Seattle illustrates the notion that within each region, there are certain geographically strategic sites which provide natural advantages for the development of regional centers. While almost every productive region in the nation supports a major city, the sites of regional centers within each region are usually related to the particular attributes of the sites which provided it with relative advantages in either the technology of industry, commerce, or trade and transportation during the time when the region was undergoing urbanization. Some major cities located at water power sites which were highly strategic in the technology of industrial power during the time of their development. Other major cities occupied river sites which formed the head of navigation. Others located at strategic deep-water harbor sites. Seattle is an example of a city which grew at a geographically strategic deep-water harbor site.

In the next few years, the influx of white pioneer settlers increased. Many of these settlers were good businessmen, who after taking inventory of the rich resource base of the hinterland and of the demand for these resources, added new functions to the early economy of Seattle. One such pioneer settler shipped a load of salmon to San Francisco. Unfortunately, the salmon spoiled before it reached its destination. Further development of a salmon industry, for sale outside of Seattle, had to wait until new techniques were developed for preserving the salmon or for carrying it more quickly to other cities.[4]

The lumbering industry, however, developed rapidly. Henry Yesler arrived from Portland and was given a plot of land where he built the first sawmill. He cut logs on that part of his land which was forested and built a "skid road" over which the logs could be dragged down the hill to his sawmill. Most of the early hotels, eating places and saloons were built close to this road to serve the loggers, mill workers, and sailors from the ships which were collecting lumber. This road is now known as Yesler Way.[5] In 1853 Seattle shipped its first load of ship spars to a foreign port (China). Only seven years later, spars were being sent to Europe as well.[6] Much lumber was also sold to the growing city of San Francisco. Moreover, as people came to Seattle to live, more lumber was needed for construction. New sawmills were built in Seattle and nearby on Puget Sound. By 1880 the mills were able to saw about 200 million board feet per year.[7]

Although the lumbering industry was the primary industry during this early port period, providing much of the impetus for the early growth of Seattle as a lumber and

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timber port, the potential of the lumbering industry was clearly limited during this pre-railroad period. This was not because the timber base was giving out; the heavy yields of the thick virgin forests had barely been tapped. The upper limit on the potential of lumbering in the Seattle area was one of limited markets. Generally, the market for this timber was limited to the construction needs of Seattle and other ports along the Pacific (chiefly San Francisco) together with some foreign demand for ship spars. During this period there was plenty of lumber still to be cut from the forests in the states around the Great Lakes. These forests were closer to markets in the eastern and central parts of the country. Not until lumber production in the Lakes area declined, did the big lumberman find it profitable to move on to the Pacific Northwest.[8] Seattle's market for lumber was also limited because no transcontinental railroad had as yet been built to connect Seattle and its forested hinterland with middle western and eastern states.[9]

During the 1880's coal mining ranked second to lumbering among industries in the Seattle area. Coal was first discovered in 1848 in the Cowlitz River Valley which crossed the Puget Sound lowland south of Seattle. By 1880 coal production in Washington territory is estimated to have passed 160,000 tons.[10]

By 1880 commercial fishing had also become important. Oysters as well as various types of fish were shipped from Seattle to other markets.[11]

In 1858 gold was discovered on the Fraser River across the border in Canada. Around 20,000 men went to these gold fields through Seattle. "The rush resulted in a slight gain in permanent population, and in the building of a blacksmith shop, a foundry, a saloon, a hardware store, and a dance hall."[13] This gold rush did not have nearly the impact on Seattle, however, that the later Klondike Gold Rush had in 1897.

As a central place, the central place functions performed in Seattle for its tributary area were reflective of the timber cutting, sawmilling, and mining activities of its hinterland together with Seattle's position as a deep-water ocean port. Seattle merchants sold the lumber camps and sawmills "...hardware, saws, boots, blankets, sugar, flour, and grease. Down out of these camps came the money, the raw materials, that made Seattle move."[14] Banks were established to serve the loggers and trappers as well as the inhabitants of Seattle itself.[15]

In the period prior to the coming of the railroads, Puget Sound was filled with boats of many kinds. Small passenger steamboats carried people and goods between the cities and small towns which had sprung up along the Sound. There were boats which carried goods and people from one place on the west coast to another. In addition, there were sea-going vessels which carried goods around the Horn to eastern cities and to Europe as well as those which carried goods to the Orient.[16]

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Seattle did not grow rapidly during this period prior to the coming of the railroads. By 1870 it had only 1,107 people.[17] The approach of the transcontinental rail system to the Pacific coast in the 1870's marked a crucial threshhold in the growth and development of Seattle.

Part II: Seattle in the Railroad Era

The time when the technology of inter-city and inter-regional travel of persons and transport of goods changed from one of horse drawn wagons and steamboats to the railroads marked a significant threshhold in the growth and development of almost every city in every region. Existing cities which were fortunate enough to be located on a major rail line or chosen as a major node on the inter-city rail grid underwent an enormous expansion in population which was concomitant to the new functions added by the railroad and the expansion of the city's hinterland. Cities which were by-passed by the major rail lines in the nation's inter-regional rail grid or lost out to other cities as a major node in the rail system generally stagnated. The rail system served to channel population settlement in the west. Hence, the beginning of the rail era marked a crucial threshhold for most cities. This was particularly true for the city of Seattle.

The story of Seattle's attempt to capture the western terminous of the transcontinental rail system is romantic and interesting in itself. It also illustrates the importance of a railroad to a city developing in this era, together with the extreme lengths to which cities of this era were willing to go in order to capture a significant place on the national rail system.

For nearly a decade it had been known that the Northern Pacific Railway had been granted a chart to build a railroad to some "point on Puget Sound."[18] However, no decision had been made as yet as to what town would be chosen for the end of the line. Each town hoped to be named. Finally, the choice was narrowed down to three towns: Tacoma, Seattle, and Mukilteo. Seattle hoped that the railroad would be built through the Cascades at Snoqualmie Pass and so be routed to Seattle. This seemed to many people to be a natural route. Consequently, a number of people moved into Seattle in expectation of its choice as the terminus for the Northern Pacific. However, the rail company selected Tacoma and started building the railroad north from Portland.[19]

The people of Seattle decided to continue their struggle for a connection with a transcontinental railroad. They used shovels and picks to begin their own railroad, hoping eventually to make a connection with the transcontinental line at Walla Walla. This would also make it possible to ship wheat from the Walla Walla area to Seattle. Four years later the people of Seattle had completed 12 miles of raolroad to Newcastle, a coal mining town. The line could then make profits by shipping coal to Seattle.

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The Northern Pacific retaliated. It controlled the steamboats which were carrying passengers from Portland along the Sound. The managers saw to it that the steamship and rail schedules were set up so that anyone coming to Portland by rail could not get a boat to Seattle until the next day. Steamer passengers from Seattle could not get a train out until the next day.[21]

Thus Seattle, declares one writer, "came very near to being a ghost."[22] Only after a change in management of the Northern Pacific was the rail line extended from Tacoma to Seattle. Even then, for 16 years the eastern railway offices would not sell anyone a ticket to Seattle itself. Moreover, the company's timetables did not list Seattle as a place to which the trains ran.[23]

In 1893, soon after Seattle won its rail connections with Tacoma, the Great Northern also completed its line to Seattle. The ensuing competition between railroads led to a reduction of almost fifty per cent in the freight rates on lumber. This meant that lumber from the Seattle area could now be sold profitably in the Middle West.[24]

In 1869 Seattle also won another plum. A Japanese steamship line decided to send its ships to Seattle rather than to other ports along the northern coast. This meant that Seattle became a place where people and goods could be transfered from steamer to transcontinental railroad or from railroad to steamer for the voyage across the Pacific.[25]

The connection on two transcontinental rail lines increased greatly the market area for the timber of the Seattle hinterland; it also ushered in a tremendous growth in the city's manufactures. By 1880 Seattle had a population of 3,533. During the next ten years a number of shops and industries were built, including a shingle mill, a machine shop, forges, and a brewery.[26] Factories were built in other cities in the state. By 1899 there were around 2000 factories in Washington. By 1910 there were around 3674.[27]

Seattle got another big boost with the discovery of gold on the Yukon River in Alaska. In 1897 a steamboat arrived in Seattle with about $800,000 worth of gold from Alaska. News of this shipment soon spread rapidly around the United States. Gold seekers from all over the country poured into Seattle by boat and rail on their way to Alaska. Seattle became the big outfitting center for the gold rush. It conducted a heavy advertising campaign to keep other coastal cities from taking the outfitting business away from them. The shops which provided needed equipment were not the only businesses to prosper during the gold rush. Hotels, restaurants, saloons, and gambling joints made big profits as people poured into the town. Factories were set up to make tools, other mining and camping equipment, and clothing.[28] So important was the gold rush to the development of Seattle that one writer has said that "Gold in Alaska is the old foundation on which the city rests today."[29]

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The gold rush brought many permanent settlers as well as money to Seattle. By 1900 the population had grown to 80,671 -- almost twice what it had been in 1890.[30]

Seattle was affected in another way by the gold rush. The people of Seattle soon heard about the way in which miners were moving huge quantities of earth by sluicing. Seattle decided to use the same method to sluice down the tops of some of its hills by using streams of water under great pressure. The earth removed from the hilltops was used to fill in the low areas around the bay. This fill made room for many new warehouses and factories.[31] Thus Seattle acquired more flat land where tops of hills had been before. It also acquired a characteristic of almost every American city that occupied a port site during this period -- the creation of much man-made land along the tidewater.

Seattle continued to boom. Shipyards expanded as the city shipped out huge quantities of lumber, fish, coal, and grain. Trade with the Far East increased. Metal factories grew up to provide chains, cables, and other steel implements needed by the lumbering and mining camps. Stores sold many others kinds of supplies to these camps. To feed the growing population of Seattle, a number of truck farmers were set up around the edge of the city. However, lumber continued to be the chief industry in the area.[32]

In 1909 a third transcontinental railroad (the Chicago, Milwaukee and St. Paul Road) reached Seattle, this time by way of Snoqualamie Pass. With three transcontinental railroads, Seattle expanded its trade with the Middle West and east still further.

Thousands of people poured into Seattle to take advantage of its boom. From 1900 to 1910 the population increased from 80,671 to around 200,000.[33] Although the early settlers had been born in the United States, many immigrants had now come to the city. Scandinavians, Finns, Irish, Italians, Germans, French, English, people from the Balkans, Chinese, Japanese and many others came to the city and its hinterlands to work in different occupations.[34]

Frequently, three reasons are given for the initial start, and subsequent growth and development of a city: (1) the location and development of a city on the site of a specific natural resource, (2) the location and development of a city as a central place in a highly productive hinterland, and (3) the location of a city at a break in trade. In the case of Seattle, all three of these classical reasons functioned in the founding and subsequent growth and development. Not only did it occupy a site of lumbering and fishing, but it served as a central place for an extensive hinterland which after the gold rush of 1897 included Alaska. Seattle also served as a break in trade between two technologies of transportation: land and water. Generally, location at a site of break in trade is conducive to growth because frequently storage, loading and unloading facilities, processing facilities and financial facilities generally find it convenient to locate at a

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The Railroad Era ends about 1914 -- the beginning of the First World War -- for at that time the city of Seattle had entered another critical threshold of its growth and development process.

Part III: Seattle as a Modern Diversified Metropolis

As Seattle expanded rapidly in population, added new central place functions, and deleted obsolete central place functions, the internal geography of the city showed concomitant changes. From a small settlement of dwellings and stores clustered near Yesler's sawmill, the city expanded rapidly, particularly with the Gold Rush of 1897, when its internal geography took on the characteristics of a town of saloons, dance halls, and cheap hotels.

By 1960 Seattle had changed even more drastically. It had attained a population of 557,087 and occupied 88.5 square miles.[35] The fact that Seattle has a population of over one-half million would lead one to expect a city of diverse functions. A fact of urban geography seems to be an increase in diversity of functions accompanying an increasing population, since a growth requirement of cities seems to be a combination of resources favoring diversity. Generally, those cities which retain only one or a few of their original functions and fail to add additional functions fail to take off in growth, for diversity of functions seems to be a requirement to obtain great urban size. Today, Seattle is a major metropolis and a highly diversified city. A city's internal geography reflects the functions it performs. Consequently, one would expect the internal geography of Seattle to exhibit many signs of diversity. Such is the case. Seattle's internal geography can no longer be described as a cluster of dwellings around a sawmill or a cheap waterfront town.

The internal geography of Seattle underwent several important changes with growth in size and development of a diversified economy. There was a tremendous areal expansion of Seattle from a cluster of dwellings around a sawmill to a city of 88.5 square miles, with a ring of suburbs extending the urbanized area much further than the city limits of Seattle. This areal expansion accompanied the population expansion and the expansion in number, volume, and diversity of central place functions. However, the outward areal expansion of the city was far from uniform in all directions. The outward growth was channelized over time by the natural setting and topography of the city. The site of the city occupying a strip of land between two bodies of water together with the seven hills served to channel the direction of urban growth. Today, Seattle looks like an hourglass on the map.[36] Like most of the larger cities occupy port sites, particularly those cities whose growth has been channelized by natural setting and topography, the "heart of the city is compact."[37]

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Approaching Seattle from the east, one passes through several bands or sectors of land exhibiting different types and intensities of land use. This east to west approach to Seattle from the Cascade Mountains illustrates several important land use principles which are applicable in a general way to many large cities. As one approaches Seattle from the east, the population density increases from the sparse mountain peaks through the foothills region into the rolling cut-over land to the urban fringe of the metropolitan area which is defined not by the city limits of Seattle but rather by the marked and abrupt increase in settlement and population density at the outer limit of the newest suburbs. This population density then increases gradually through the older suburbs into the city of Seattle where it continues to increase until it reaches a maximum in the older multiple dwelling areas of Seattle which occuyp hill tops behind the central business district. Along with this increase in population density, there is a pattern of land use showing an east to west increase in intensity of economic functions performed on the land. This change in type and intensity of land use is well marked in the change from uninhabited mountain peaks to ranches, dairy and poultry farms in the foothills, to more intensive uses such as orchards and recreational camps on the rolling cut-over land, to the much more intensive use of residential areas beginning at the urban fringe and continuing into the heart of the city.

Significant generalizations about the growth and development of Seattle can be made also if the approach is by water from the west. As one approaches Seattle by boat, it is impossible to see the city until the boat enters Elliott Bay. The bay is lined with piers and wharves. Past the flat water front area can be seen the warehouses and factories. Beyond them are the skyscrapers and other office buildings. Higher up on the hills can be seen apartment buildings. This approach from the west illustrates significant urban land-use principles. The pattern of land uses from the shores of Elliott Bay up the hills of the city is probably the result of two factors: the port nature of the city and its topography. As one moves from the shores of Elliott Bay into the city, one is struck by the land-use pattern's similarities with those of other port cities. The typical land use pattern of a port city begins with the ocean or river, followed by a series of saw-tooth piers and wharves, followed by a sector containing some of the oldest buildings in town in what was the first retail area of the city. This sector is followed by the present warehouse-wholesale district, which is followed by the modern central business district with its stores and skyscraper offices. Then there is a hiatus in height which marks the end of the skyscraper boom of the 1920's. This sector is marked by a series of shorter commercial buildings and is followed by the beginning of the city's residential area in high-density older multiple dwellings.

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Between the Klondike Gold Rush of 1897 and the beginning of the First World War, Seattle had entered a new and even more significant threshold in its growth and development. I would call this threshold the Americanization of Seattle through the beginnings of a diversified economy. As the rest of the economy of America impinged upon Seattle, the city lost its former identification as a lumber port or gateway to Alaska and became diversified. Buildings typical of other U.S. cities were erected: a Ford assembly plant, a Sears Roebuck branch building, a Woolworth building, and a J.C. Penny store.

Like other major American cities, Seattle showed a growth pattern which was not uniform. A number of significant and critical thresholds marked an acceleration of a previously relatively stable growth rate. In the case of Seattle, one can mark off several important thresholds in its growth and development: its initial founding, the transcontinental railroad connections, the Klondike Gold Rush, two World Wars and the Korean War. The critical thresholds in Seattle's growth and development in the twentieth century were wars--the influx of military personnel through its port, the influx of civilian workers into the defense industries, and the concomitant boom to the entire economy of the city.

During the First World War the number of shipyards in Seattle increased. By the end of the war there were twenty of them, employing about forty thousand workers.[39] There had been only 11,523 workers in all Seattle in 1914.

The modern economy of Seattle is based upon the city's position as a modern transportation node, its diversified manufacturing, and its position as a central place.

The position of Seattle as a major transportation node is based upon its main-line railroads, its major position on air routes, and its position as a modern seaport. These railroads (the Great Northern, the Northern Pacific, and the Chicago-Milwaukee,St. Paul and Pacific) provide Seattle with direct transportation to the east. In addition, Seattle is connected by railroad with Portland which has a Union Pacific line to the east.

Seattle is also a major air terminal where most of the nation's major airlines make regular and frequent landings and departures. According to Goode's World Atlas map of air routes, over one million passengers were emplaned at the Seattle airport in 1956.[40]

Today, Seattle is more important than ever as an ocean port. From the beginning, when the first settlers on the shores of Puget Sound moved their settlement to the present site of Seattle, its citizens have realized the natural advantages of the city as a port. They have made a series of improvements which have enhanced the position of Seattle as a port city. In 1911 dredging of the channel of the Duwamish River made it possible for ocean-going vessels

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to go up the river to new wharves. In 1915 the completion of the Panama Canal shortened the water route between Seattle and New York by some eight thousand miles.[41] In 1917 the government completed the Lake Washington Ship Canal. This twenty-mile canal connects Elliott Bay with Lake Union and Lake Washington. Ocean-going vessels can dock in both Lake Union and Lake Washington.[42] Seattle is far enough from the ocean so that the Elliott Bay harbor with its locks is protected from ocean storms. The canal, gave the port an added advantage. Ships can sail into a fresh-water harbor in Lake Washington. Here they can load and unload beyond the effects of the tides. Moreover, "barnacles which have fastened to the hulls of ships will drop off in the fresh water, saving the time and expense of putting the ship into dry dock to have them removed."[43]

Another factor in the position of Seattle as a port is its relative location. In addition to being the nearest port to Alaska, Seattle is closer to the Far East than any other port. The locational advantage of Seattle over New York in terms of trade with Oriental ports is quite evident. For example, from New York to Yokohama, Japan, via the Panama Canal, involves over 11,000 statute miles, while from Seattle to Yokohama is a distance of only slightly more than 4,000 miles via the great circle route.[44] Seattle, by way of the northern trade routes, is also nearer to Japan than are the California ports whose ships follow the southern routes via Hawaii.

By 1937 the value of foreign imports into Seattle was surpassed only by imports into the New York City port.[45] The major goods imported included paper and newsprint, fruit and fruit preparations, bananas, and wool. Major exports through the Seattle port include wheat and flour, coal, steel products, lumber, cement, and petroleum.

Because of its position as a seaport, Seattle also became a major shipbuilding center. Although shipbuilding had from the beginning been one of Seattle's leading industries, its importance was magnified by two world wars and by the Korean War.

Since 1900 there have been significant changes in the manufacturing economy of Seattle. In 1940 the first aluminum plant was built. In 1955 an oil-refinery was built to refine petroleum brought by a new pipeline from the Alberta oil fields.

The aircraft industry is now the leading industry in Washington. In December of 1956 it employed 50,600 workers, while lumbering industries employed only 49,000 workers.[46] For the city of Seattle, the lead over lumbering would be considerably higher since the state's aviation industry is highly concentrated in Seattle. Seattle's importance in the aircraft industry began in 1917 when Boeing built an aircraft plant on the Duwamish River. This plant built military planes used in World War I. After the war was over, it turned to building commercial planes. It pioneered in the
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pioneered in the development of all-metal planes. The number of people employed by Boeing's plant in Seattle increased from about 6,000 in January of 1940 to about 43,000 in January, 1945, as a result of World War II.[47]

In a single decade--from 1940 to 1950 employment in the nonferrous-metals industry rose by more than 6,600 in the Pacific Northwest hinterland of Seattle, representing an increase of 182 per cent, which is 3.5 times the national increase. By 1950, 3.2% of total national employment in the nonferrous-metals industry was concentrated in the Pacific Northwest hinterland of Seattle. The three largest aluminum producers--Aluminum Company of America, Reynolds Metals Company, and Kaiser Aluminum and Chemical corporation--are now firmly established in Seattle and its hinterland.[48]

When the Stanford Research Institute undertook an objective and independent study of the factors that favored further development of aluminum-fabricating in Seattle and its hinterland, the most important factors listed were: (1) the plentiful water supply and hydroelectric potential making the Northwest a suitable region for the smelting and fabricating of aluminum; (2) the great distances between population centers in the area makes transportation of great significance, thus creating a huge market for aluminum's use as a major construction material in the manufacture of transportation equipment for aircraft, ships, railroad cars, etc., (3) an adequate pool of trained workers exists in the region; hence it was not necessary to recruit large groups from other areas to manufacture aluminum. This labor supply was a result of World War II development.[49]

Although lumbering is no longer as important as formerly, the Seattle hinterland of Washington led the country in the amount of lumber produced from 1905 to 1938, except for one year.

The fishing industry has also remained important. The state of Washington ranks third among U.S. states in terms of the value of fish products. The fishing industry provides the livelihood directly for many fisherman residing in Seattle. Indirectly, it provides employment of many other Seattle citizens in the processing, freezing, and canning of fish products.

The milling of wheat into flour and the manufacture of cereals from wheat and other grains are also important industries. Seattle is one of the leading milling centers in the state of Washington.

In conclusion, manufacturing is relatively and absolutely important in the modern economy of Seattle. The 1963 Census of Manufacturing indicated the importance of manufacturing in the Seattle-Everett Standard Metropolitan Area: 2,026 manufacturing establishments employing

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121,892 employees with an annual payroll of over 854 million dollars, and a total value added by manufacturing approximately 1.5 billion dollars. The relative importance of the various kinds of manufacturing in the SMA is indicated by the order of importance in value added by manufacturing. By this measure the leading manufacturing sectors in the manufacturing economy of the SMA were: transportation equipment, food and kindred products, lumber and wood products, fabricated metal products, paper and allied products, machinery excluding electrical, stone, clay, and glass products, apparel and related products, and primary metal industries.[50]

In addition to being a major transportation node, and a major center of diversified manufacturing, Seattle is also a major central place. Its hinterland includes most of the Puget Sound lowlands in Washington west of the Cascade Mountains. For some goods, Seattle's present hinterland would also include Alaska.

Several important changes have occurred in Seattle's role as a central place. Until around 1920, most of the people who came to Seattle to shop came by boat. Today people are more likely to go to Seattle by automobile.[51]

The 1963 Census of Business indicates that retail trade, wholesale trade, and the services of Seattle provided both to its own residents and to its hinterland make up a very significant aspect of its modern economy. In number of establishments in the city of Seattle, retail trade led with 5,216, followed by 4,455 service establishments, and 2,102 wholesale establishments. In terms of gross income (sales or receipts), wholesale establishments led with over 2.8 billion dollars of sales, followed by retail merchants with 1.0 billion dollars of sales, followed by the 221 million dollars in receipts earned by those engaged in the services. In terms of the size of the annual payroll, wholesale merchants led with an annual payroll of 161 million dollars, followed by 147 million dollar payroll of retail merchants, and the 70 million dollar payroll of firms providing services.[52]

The relative importance of manufacturing, wholesale and retail trade, transportation, construction, and other sectors of the Seattle economy can be seen from the 1960 statistics of the city's Civilian Labor Force. The total 1960 Civilian Labor Force in Seattle of 230 thousand, was employed in the following sectors of its economy:[53]

	Labor Force Employment in Thousands
Wholesale and Retail Trade	49
Manufacturing--durable goods	40
Manufacturing--nondurable goods	16
Finance, Insurance, and Real Estate	15
Transportation	14

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Labor Force Employment in Thousands

Educational Services	13
Public Administration	12
Construction	11
Communications & Other Public Utilities	7

Over the period of its growth, the twentieth century for Seattle as for other American cities, marked an emergence of a new breed of urban workers--the white collar workers. Today, unlike the days when it was an early logging camp or lumber port, and unlike the days of the gold rush, most Seattle workers are employed in offices, stores, and in the professions. The 1960 Census of Population showed that 55 out of every 100 workers in the Seattle Civilian Labor Force were employed in occupations which the Census Bureau classified as white collar.[54]

FOOTNOTES

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4. WPA Writers, p. 214.

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26. WPA Writers, p. 217.

27. Barto, p. 218.

28. WPA Writers, pp. 218-219; Barto, p. 177.

29. Jones, p. 89.

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31. Binns, *The Roaring Land*, p. 166.

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1. "Retail Trade-Washington."
2. "Wholesale Trade-Washington."
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